

Casting a FRAND Shadow: The Importance of Legally Defining “Fair and Reasonable” and How *Microsoft v. Motorola* Missed the Mark

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I. Introduction

High tech markets must strike an awkward balance between coordination and competition in order to achieve efficiency. The need for competition is familiar; antitrust—as well as many other legal institutions—recognizes that consumers benefit and resources are best allocated when producers face fierce competition. But at the same time, the interoperability of competing high tech products can promote both consumer and producer welfare,¹ necessitating a level of coordination not typically associated with atomistic, competitive markets. The necessity of interoperability

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¹ See *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 308–09 (3d Cir. 2007); Elyse Dorsey & Matthew R. McGuire, *How the Google Consent Order Alters the Process and Outcomes of FRAND Bargaining*, 20 *GEO. MASON L. REV.* 979, 981 (2013); Deborah L. Feinstein et al., *Economists’ Roundtable on Hot Patent-Related Antitrust Issues*, 27 *ANTITRUST*, Summer 2013, at 10, 11; Joseph Kattan, *FRAND Wars and Section 2*, 27 *ANTITRUST*, Summer 2013, at 30, 30 (“Standards play a critical role in the computing, networking, communications, and electronics industries, among others, by enabling different manufacturers’ products to exchange information with and work alongside each other.”).

has been addressed privately by industry-wide standard-setting and coordination of competitors around these standards.² Likewise, the competitive risks of that coordination are also addressed through private agreements; standard-setting organizations (SSOs) typically require that holders of patents essential to the standard agree by contract to license their patents to users at fair, reasonable, and non-discriminatory (FRAND) rates.³

What is a “fair and reasonable” rate?⁴ This question has plagued courts and scholars alike, but until earlier this year no court had actually determined a “fair and reasonable” rate for standard-essential patents (SEPs). The first,⁵ and to date only, determination of such a rate was performed by Judge James L. Robart in *Microsoft v. Motorola*,⁶ a contract dispute over whether Motorola breached its FRAND commitment by requesting 2.25% of the final price of Microsoft products using its standard-essential technology. Judge Robart, in a lengthy opinion that is dense with facts, carefully considered the technology at issue, the setting of the standard, and the negotiations that led up to the dispute, ultimately arriving at a rate far lower than Motorola had demanded.⁷

While Judge Robart should be commended for taking the bull by the horns, his opinion is ultimately unsatisfactory because it at least partially begs the question it tries to answer. To arrive at the “fair and reasonable” rate, he conducted a hypothetical negotiation between Microsoft (the patent user in the case) and Motorola (the patent holder). Hypothetical negotiations are often invoked by economists as the appropriate method to determine efficient “fair and reasonable” rates,⁸ and so in that sense his method stood on solid ground. However, he chose the wrong moment in time for the hypothetical negotiation, conducting it after the FRAND obligation was in place.⁹ But legal opinions like Judge Robart’s are the FRAND context—the legal shadow in which FRAND negotiations occur—not the other way around.

² See Dorsey & McGuire, *supra* note 1, at 981–82; Feinstein et al., *supra* note 1, at 11; Suzanne Michel, *Bargaining for RAND Royalties in the Shadow of Patent Remedies Law*, 77 ANTITRUST L.J. 889, 891 (2011).

³ See Dorsey & McGuire, *supra* note 1, at 984–85; Kattan, *supra* note 1, at 30; Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135, 1140 (2013).

⁴ The related question of what is non-discriminatory is also essential to giving meaning to FRAND commitments, but because the case on which this essay is focused discussed only the reasonable portion of the FRAND inquiry, I will not discuss the non-discrimination requirement. For an excellent discussion of the “ND” in FRAND, see Dennis W. Carlton & Allan L. Shampine, *An Economic Interpretation of FRAND*, 9 J. COMPETITION L. & ECON. 531, 546 (2013).

⁵ See Kattan, *supra* note 1, at 31 (referring to *Microsoft v. Motorola* as “the only judicial decision to date to establish a F/RAND royalty rate”).

⁶ *Microsoft Corp. v. Motorola, Inc.*, No. C10–1823JLR, 2013 WL 2111217, at *12–20 (W.D. Wash. Apr. 25, 2013).

⁷ *Id.* at *2–4.

⁸ See, e.g., Lemley & Shapiro, *supra* note 3, at 1147 (discussing the use of hypothetical negotiations in setting a reasonable royalty).

⁹ See *Microsoft*, 2013 WL 2111217, at *16 (“In this section, the court sets out the factors that an SEP owner and standard-implementer would consider during a hypothetical negotiation over a reasonable royalty rate to be paid for patents obligated to a RAND commitment.”).

This essay proceeds in four parts. Part I provides an overview of Judge Robart's "fair and reasonable" rate determination in *Microsoft v. Motorola*. Part II then points out the importance of establishing a legal definition of the "FR" ("fair and reasonable") in FRAND terms. Part II goes on to advocate using a patent's pre-standard incremental value over alternatives as its *ex post* "fair and reasonable" rate, but also identifies the difficulties of measuring that value. Part III then argues that by trying to avoid the vagaries of counterfactual reasoning that an *ex ante* incremental value determination requires, Judge Robart's "fair and reasonable" analysis in *Microsoft v. Motorola* is less useful to potential FRAND litigants than it could have been. Part IV suggests that in FRAND disputes, courts should consider setting "fair and reasonable" rates by simulating a pre-standard bargain not between the parties to the *ex post* FRAND dispute, but rather between the patent holder and the SSO itself. Using these parties for the hypothetical bargain may address some of the informational uncertainties that plague counterfactual reasoning about "fair and reasonable" rates while also approximating the *ex ante* incremental value of the technology.

II. Judge Robart's Opinion

Microsoft sued Motorola in 2010, alleging that Motorola breached its obligation to license patents essential to two standards used in Microsoft products at FRAND¹⁰ rates. Microsoft was not actually party to the contracts that gave rise to the obligation; those contracts were between Motorola and two SSOs, the Institute of Electrical Electronics Engineers (IEEE) and the International Telecommunication Union (ITU).¹¹ The contracts memorialized the terms on which the SSOs would consider incorporating Motorola's patents in industry-wide standards. As it turned out, the IEEE incorporated sixteen Motorola patents into a video coding standard known as H.264,¹² and the ITU incorporated twenty four of Motorola's patents into a Wi-Fi standard known as 802.11, according to Motorola.¹³ Thus, according to the terms of Motorola's contracts with the IEEE and the ITU, Motorola was obligated to license all of its patents essential to the H.264 and 802.11 standards to all users at "fair and reasonable" rates. Microsoft, who uses the standards in question in several of its products including Xbox and Windows, claimed that it was the third-party beneficiary of these contracts and so could sue Motorola to enforce a FRAND rate—and the court agreed.¹⁴

A. Standard-Setting and Economic Guideposts for FRAND rates

Recognizing that Microsoft's breach of contract claim hinged on the factual question of whether Motorola's proposed terms of 2.25% were FRAND, Judge

¹⁰ Actually, it appears that the contractual term omitted the "fair" portion, and indeed Robart refers throughout to "RAND" rates. But "FRAND" and "RAND" have been given identical meaning in the law and legal literature, and so I use "FRAND" throughout this paper for simplicity.

¹¹ *Microsoft*, 2013 WL 2111217, at *1.

¹² *Id.* at *27.

¹³ *Id.* at *53.

¹⁴ *Microsoft Corp. v. Motorola, Inc.*, 864 F. Supp. 2d 1023, 1029, 1032 (W.D. Wash. 2012).

Robart embarked on a factual determination of “fair and reasonable” rates for the patents at issue, publishing his “findings of fact and conclusions of law” in the opinion.¹⁵ Judge Robart began the opinion by summarizing the use and purpose of FRAND, identifying the benefits of standards while emphasizing the competitive risks that FRAND agreements are designed to address.¹⁶ He explained that once a standard is set, holders of standard-essential patents can hold-up users of the standard by demanding exorbitant licensing fees for their now essential technology.¹⁷ Hold-up is an exercise of SEP-holders’ market power conferred by the standard itself; without the standard, the patent holders would have faced competition from technological alternatives.¹⁸ He explained that in order to prevent hold-up, SSOs typically demand that as a condition for incorporating a technology into a standard, owners of patents in that technology must agree to license all users on FRAND terms.¹⁹ This safeguard, Judge Robart observed, helps the SSO achieve its ultimate goal: industry-wide adoption of the standard.²⁰

With these goals of SSOs and FRAND commitments in mind, Judge Robart then explored the economic meaning of fair and reasonable. After hearing from several expert economists, Judge Robart observed some general principles that would guide his FRAND determination.²¹ First, he explained, a “fair and reasonable” rate must avoid the hold-up problem it was designed to address.²² Second, “fair and reasonable” rates should “address the risk of royalty stacking by considering the aggregate royalties that would apply if other SEP holders made royalty demands” on the many patents (often in the thousands) used by a high-tech product.²³ Finally, Judge Robart observed that the “fair and reasonable” rate should not reward the value of the patent as essential to an industry standard because that value is what gives the patent holder the market power to hold-up users and what necessitates FRAND commitments in the first place.²⁴

Judge Robart then paraphrased the FRAND measures offered by each side, ultimately expressing a preference for Motorola’s.²⁵ Judge Robart pointed out that Microsoft’s suggestion—that the “incremental value of the technology compared to

¹⁵ *Microsoft*, 2013 WL 2111217, at *1.

¹⁶ *Id.* at *12.

¹⁷ *Id.* at *10–11.

¹⁸ For an excellent discussion of hold-up, see Joseph Farrell et. al, *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603, 612–15 (2007).

¹⁹ *Microsoft*, 2013 WL 2111217, at *7.

²⁰ *Id.* at *10.

²¹ *Id.* at *12.

²² *Id.*

²³ *Id.* See Feinstein et al., *supra* note 1, at 14–15; Lemley & Shapiro, *supra* note 3, at 1150. Royalty stacking is an overpricing inefficiency commonly known as a “Cournot compliments” problem. In the context of individually negotiated licensing agreements, the holder of each patent essential to the production of the product has the incentive to demand up to the producer’s profit. Without collectively bargaining with the patent holders, the producer will be unable to negotiate licenses at a cost that will allow him to produce the product.

²⁴ *Microsoft*, 2013 WL 2111217, at *12.

²⁵ *Id.* at *13–16.

the alternatives that could have been written into the standard”—is technically correct as a matter of economic efficiency, but he rejected it as too “hard to implement.”²⁶ Rather, he accepted Motorola’s suggestion that FRAND terms be determined by “simulating a hypothetical bilateral negotiation” between Motorola and Microsoft.²⁷ This option had more practical appeal for Judge Robart because similar negotiations actually occur in the real world.²⁸ Further, the existence of a legal standard for constructing hypothetical licensing deals—set forth in *Georgia-Pacific Corp. v. United States Plywood Corp.*²⁹ and endorsed by the Federal Circuit³⁰—counseled in favor of Motorola’s approach.³¹

Judge Robart emphasized, however, that the hypothetical negotiation must take place within the FRAND context.³² One consequence of this conclusion was that some of *Georgia-Pacific*’s fifteen factors needed modification.³³ Where the traditional test, which is used in patent infringement cases to determine damages, asks courts to look to comparable licenses in the industry, Judge Robart decided that only licenses subject to FRAND commitments would be comparable.³⁴ Similarly, where *Georgia-Pacific* suggests looking to the customs of the industry in setting royalty rates, Judge Robart insisted that only practices within the FRAND context would be considered.³⁵ Finally, and perhaps most importantly, for the *Georgia-Pacific* factors that directed courts to consider the value of the patented technology,³⁶ Judge Robart said he would only consider the value of the technology apart from its value as essential to a standard.³⁷

B. Judge Robart’s Hypothetical Negotiation

Armed with a modified fifteen-prong test and some general principles about the economic goals of FRAND, Judge Robart began the ambitious task of constructing counter-factual negotiations between Motorola and Microsoft over the SEPs. Because the technical features of the standards and patents formed the context of this hypothetical negotiation, Judge Robart meticulously detailed the technology and the standard-setting process that gave rise to H.264 and 802.11, as well as the

²⁶ *Id.* at *13.

²⁷ *Id.* at *14.

²⁸ *Id.*

²⁹ 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

³⁰ See *Laser Dynamics, Inc. v. Quanta Computer Inc.*, 694 F.3d 51, 60 n.2 (Fed. Cir. 2012) (quoting *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1317 (Fed. Cir. 2011)) (stating that the *Georgia-Pacific* factors have been previously approved by the federal circuit to frame the determination of a reasonable royalty).

³¹ *Microsoft*, 2013 WL 2111217, at *15.

³² *Id.* at *16.

³³ *Id.*

³⁴ *Id.* at *18.

³⁵ *Id.*

³⁶ *Ga.-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (referring to the value of the patented technology in factors 6, 8, 10, 11, and 13).

³⁷ *Microsoft*, 2013 WL 2111217, at *12.

role that each standard plays in Microsoft's Windows and Xbox.³⁸ Crucially, Judge Robart concluded that Motorola's patents were relatively minor components of the standards, and the standards were relatively minor components of Microsoft's products.³⁹

With the relative value of Motorola's patents to Microsoft's products in mind, Judge Robart turned to the *Georgia-Pacific* factors. Several of the factors direct courts to consider comparable license deals—within the industry and preferably with the products and parties in question—in determining a reasonable royalty.⁴⁰ To aid in this inquiry, each side presented deals that it believed most closely approximated hypothetical Microsoft-Motorola transactions over patents essential to the standards.⁴¹ Motorola justified its demand of 2.25% by showing that it had received that royalty from three other users of the standards,⁴² but the court rejected these because in each case only a portion of the 2.25% royalty could be attributed to the use of the H.264 and 802.11 SEPs.⁴³

Microsoft's suggested comparable transactions, and the ones the court ultimately used, were licensing fees charged in patent pools to which many holders of patents essential to the H.264 and 802.11 standards belonged.⁴⁴ Patent pools are associations of SEP owners and users that allow all members to share the use of the patents in the pool.⁴⁵ Users are charged set fees to use all the patents in the pool, avoiding the transaction costs associated with individual negotiations, while patent holders are paid royalties on a per patent basis, avoiding the transaction costs of individual determinations of patent value.⁴⁶ Patent pools are voluntary—patent owners can opt out of pools in favor of individual negotiations with users—and FRAND commitments neither preclude nor require participation in pools.⁴⁷ Judge Robart explained that patent pools provided an excellent baseline for a FRAND rate determination because FRAND commitments and patent pools share a primary goal: to promote and facilitate the widespread use of the patented technology.⁴⁸ Further, patent pools often contain thousands of patents used in a single product, so the rates are unlikely to contribute to the royalty stacking problem that may result from individualized licensing.⁴⁹

³⁸ *Id.* at *21–27, *42–64.

³⁹ *Id.* at *47–48, *57–58, *60, *62, *64.

⁴⁰ *Id.* at *17.

⁴¹ *Id.* at *65–72, *74, *93–96.

⁴² *Id.* at *65.

⁴³ *Microsoft*, 2013 WL 2111217, at *68, *70–72.

⁴⁴ *Id.* at *82.

⁴⁵ *Id.* at *74–75. See also Roger B. Andewelt, *Analysis of Patent Pools Under the Antitrust Laws*, 53 ANTITRUST L.J. 611, 611 (1985) (“All pools . . . have one common characteristic: two or more patent owners mutually agreeing to waive exclusive rights under their respective patents so as to grant each other rights . . . under their patents.”).

⁴⁶ *Microsoft*, 2013 WL 2111217, at *74–75. See also Andewelt, *supra* note 45, at 611–12 (discussing pool license fees).

⁴⁷ *Microsoft*, 2013 WL 2111217, at *74.

⁴⁸ *Id.* at *89.

⁴⁹ See Feinstein et al., *supra* note 1, at 15 (stating that patent holders do not usually coordinate with

Both the H.264 standard and the 802.11 standard have a relevant patent pool, but not all patents essential to each standard are available in the respective pools. Although Motorola initially expressed interest in joining the pools, it ultimately did not do so, electing to individually negotiate licenses with users of the H.264 and 802.11 standards.⁵⁰ Judge Robart accepted Microsoft's expert's argument that the FRAND rate should be based on what Motorola would have earned in the pool.⁵¹ This rate, according to the expert, was \$0.185/unit for the H.264 patents⁵² and \$0.02/unit for the 802.11 patents.⁵³

The court did not end its analysis there, however. The fact that Motorola elected not to join the patent pools suggested that it believed it could get more by individually negotiating licenses for its SEPs outside the pool than it would gain in membership benefits. That FRAND commitments do not require pool participation suggests that royalties individually negotiated outside of the pools (and by implication higher than those earned in the pools) can still be FRAND.⁵⁴ Judge Robart concluded that these individual bargains are precisely those bilateral, private negotiations that his FRAND analysis sought to recreate.⁵⁵ The court reasoned that Motorola must have expected to get at least as much from individually negotiating with Microsoft as what Motorola was willing to give up in pool benefits.⁵⁶ In other words, if Motorola thought it could do better in a bilateral FRAND negotiation, then its expected royalty rate from that deal must have been at least equal to all the benefits of pool membership. The expert's figure represented only the royalty fees Motorola would obtain in the pool, but the court observed that by joining, Motorola also would have obtained access to all other members' patents.⁵⁷ The true measure of what Motorola hoped to gain from a negotiated FRAND rate was the sum of its potential pool royalties and the value of access to the pool's intellectual property.⁵⁸

Unfortunately, Judge Robart did not have any evidence of how valuable the patents in the pools were to Motorola, but he did have that information for Microsoft, at least for the H.264 patent pool.⁵⁹ Microsoft, both an owner and a user of SEPs,

each other, causing the royalty stacking problem). *See generally* Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2014 (2007) (discussing the tendency for holders of weak patents to overcharge).

⁵⁰ *Microsoft*, 2013 WL 2111217, at *75–78 (discussing Motorola's history with the H.264 pool), *88 (discussing Motorola's history with the 802.11 pool).

⁵¹ *Id.* at *84. Microsoft's expert estimated the royalties Motorola would have received not only if it had joined the pool, but also if other holders of patents essential to the standards also joined. The expert claimed that this helped avoid the royalty stacking problem. The expert calculated the rates if all of the patent holders joined the H.264 pool, and more (but not all) joined the 802.11 pool. It is not clear how many is "more" nor why the expert chose different hypotheticals for each pool.

⁵² *Id.*

⁵³ *Id.* at *91.

⁵⁴ *Id.* at *80.

⁵⁵ *Id.* at *82.

⁵⁶ *Microsoft*, 2013 WL 2111217, at *84–85.

⁵⁷ *Id.* at *84.

⁵⁸ *Id.*

⁵⁹ *Id.*

paid twice as much into the H.264 pool than it received in royalties.⁶⁰ Judge Robart reasoned that as a similarly large, technologically-inclined firm, Motorola would enjoy the same benefits.⁶¹ Thus, the court tripled the expert's estimate of \$0.185/unit to account for the royalty rate and the additional benefits Motorola would have received if it had joined the H.264 pool, arriving at a FRAND rate of \$0.0555.⁶² The court repeated a similar analysis for Motorola's hypothetical membership in the 802.11 pool, resulting in a \$0.06114/unit rate.⁶³ These figures were several orders of magnitude lower than the 2.25% rate demanded by Motorola.

III. Economic Definitions of FRAND and Practical Challenges

Although he could have gone further, Judge Robart's opinion sheds some much-needed light on what "fair and reasonable" means in the FRAND context. And the basic premises of his opinion—that technically speaking, an economically efficient "fair and reasonable" rate will reflect the *ex ante* "incremental contribution of the patented technology to the standard,"⁶⁴ and that such optimal "fair and reasonable" rates can be estimated by simulating a hypothetical negotiation between the patent holder and the patent user—are certainly correct.⁶⁵ As discussed in the next section, the flaw of Judge Robart's opinion stems from his rejection of the "*ex ante* incremental value" standard as impractical, and his improper situating of the hypothetical negotiation at a time when FRAND agreements were already in place. Here, I make the case that judicial determinations of "fair and reasonable," like that attempted by Judge Robart, are crucial to the proper function of FRAND contracts. This section then goes on to make the economic case for the *ex ante* incremental value standard and for the need to construct the hypothetical negotiation in a pre-standard, pre-FRAND world.

A. The Necessity of Defining "Fair and Reasonable" Rates

Although scholars tend to agree that an economically viable definition of "fair and reasonable" is essential to preventing hold-up and ensuring the success of standards, recent academic work has focused on the "non-discriminatory" part of the inquiry and on reforming the procedure of FRAND rate estimation. The benefit of shifting the focus away from "fair and reasonable" is avoiding the uncertainties of hypothetical negotiations that proved so vexing in *Microsoft*. But even a rigorous and workable definition of "non-discriminatory" can only supplement, not re-

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Microsoft*, 2013 WL 2111217, at *85.

⁶³ As it turned out, this figure was merely one data point in Judge Robart's FRAND calculation for 802.11, for two reasons. First, he believed that the 802.11 patent pool was a less strong indicator of FRAND rates than the H.264 pool. *Id.* at *91. Second, unlike in the H.264 determination, Judge Robart had access to other reliable comparable transactions that provided additional information about FRAND rates for 802.11. The number he eventually settled on for a FRAND rate for Motorola's 802.11 patents was \$0.03471. *Id.* at *99.

⁶⁴ *Id.* at *13. See also Feinstein et al., *supra* note 1, at 13; Lemley & Shapiro, *supra* note 3, at 1138; Michel, *supra* note 2, at 893.

⁶⁵ Lemley & Shapiro, *supra* note 3, at 1147–48.

place, the “fair and reasonable” inquiry. And procedural reforms will operate well only when there is some coherent substance to the meaning of FRAND.

In the lead piece of this symposium, Dennis Carlton and Allan Shampine advocate adding economic rigor to the “non-discriminatory” prong of FRAND.⁶⁶ The authors define discrimination as charging similarly situated users different rates, where “similarly situated” firms are those that derive the same benefit from the patented technology.⁶⁷ This solution is entirely sensible, but cannot, by itself, affix meaning to a FRAND term; equal treatment is still economically inefficient if the patent holder charges exorbitant, albeit equally exorbitant, licensing fees from similarly situated users. It is for this very reason, presumably, that SSOs impose “FRAND” terms, not “ND” terms. Thus only if patent holders license to some entities who, because of the elasticity of their demand, are unwilling to pay more than “fair and reasonable” rates, will this focus on “non-discriminatory” work to approximate a FRAND rate. It is possible that this situation arises not infrequently, but the benefits of relying on the “non-discriminatory” prong at the expense of the “fair and reasonable” prong, even in these circumstances, should not be overstated. Carlton and Shampine define “similarly situated” firms as ones who derive the same value from the patent; this inquiry into “value” of a patent is essentially the same factually-fraught inquiry demanded by the “fair and reasonable” standard and would require similar counter-factual reasoning for its resolution. This suggests that Carlton and Shampine’s proposal works best when paired with a workable definition of “fair and reasonable.”

Procedural reforms of the FRAND determination likewise work best when paired with an objective and efficient legal definition of “fair and reasonable.” Mark Lemley and Carl Shapiro advocate reforming FRAND litigation procedure to spare courts the difficulty and embarrassment of unmoored *Georgia-Pacific* rate determinations.⁶⁸ They propose baseball-style (or “final-offer”) arbitration to settle disputes over whether a rate is FRAND.⁶⁹ Baseball-style arbitration—in which each party submits a final offer between which the decision-maker must choose without splitting the difference—creates incentives that push each party towards a reasonable offer, in theory converging on a “correct” number.⁷⁰ But this proposal cannot entirely avoid the problem of defining FRAND because the arbitrator needs criteria for selecting between the two final offers.⁷¹ Although baseball-style arbitration can force information, without a stable legal definition of FRAND, neither party has any

⁶⁶ Carlton & Shampine, *supra* note 4.

⁶⁷ According to Carlton and Shampine, if firms compete directly with each other, that is evidence that they are similarly situated and ought to be charged the same price for that price to qualify as FRAND. *See id.*

⁶⁸ Lemley & Shapiro, *supra* note 3.

⁶⁹ *Id.* at 3.

⁷⁰ *Id.*

⁷¹ Indeed, Lemley and Shapiro recognize this, and they suggest what this Essay advocates as a way to measure FRAND rates: a hypothetical, pre-standard negotiation aimed at measuring the incremental value added by the patented technology over the next best alternative. *See* Lemley & Shapiro, *supra* note 3, at 10–11.

meaningful information about the reasonable rate to reveal in their offers. In other words, there is no externally reasonable rate on which the parties' offers will converge.

Both of these pieces propose sensible reforms that can help to streamline resolution of FRAND disputes towards economically sensible outcomes. But neither will function very well without some objective rules about what "fair and reasonable" means as a matter of law.⁷² Thus judicial endeavors like Judge Robart's "fair and reasonable" determination in *Microsoft v. Motorola* are necessary to cast the shadow in which arbitration or non-discriminatory dealing will occur. Recognizing the importance of such a definition, Judge Robart squarely addressed it and provided an actual numerical estimate, rather than avoiding the question as other courts have done. But unfortunately, as I discuss in the next section, Judge Robart's opinion in *Microsoft* could have gone farther to clarify the legal meaning of "fair and reasonable."

B. Economically Efficient FRAND Rates: Incremental Value Over Alternatives

If FRAND agreements are designed to avoid the problem of patent hold-up, and patent hold-up is defined as patent holders abusing market power conferred by being chosen as essential to a standard, then a FRAND rate should be no greater than what the patent holder could charge without the additional market power conferred by its status as essential to a standard. Standard setting, by its nature, eliminates competition by preventing free substitution among technological alternatives; if "fair and reasonable" rates are to be interpreted to counteract price increases that would naturally follow such a restriction on competition, then they must reflect the competitive environment that pre-dated the setting of the standard. In such an environment, any premium a patent holder would be able to command would reflect the marginal benefit of its product over the next-best alternative. Thus, economists have suggested that "fair and reasonable" rates can be estimated by creating hypothetical bargains between the parties that take place before the standard has been created.⁷³ Crucial to this determination is the cost and desirability of alternative technology because a patent user is only willing to pay for what it cannot obtain more cheaply elsewhere.

Legal scholars have suggested that courts use patent infringement law as a template for reconstructing this hypothetical negotiation,⁷⁴ as Judge Robart did in *Microsoft v. Motorola*. In a patent infringement case, the plaintiff is entitled to, at a minimum, a reasonable royalty as a measure of its damages.⁷⁵ Courts, following

⁷² As Gregory Leonard observed in a recent interview with ANTITRUST, "Everything else will flow from a specific definition of FRAND." Feinstein, et al., *supra* note 1, at 16.

⁷³ Lemley & Shapiro, *supra* note 3, at 1147.

⁷⁴ *E.g., id.* at 1147–48.

⁷⁵ 35 U.S.C. § 284 (2006) (providing in relevant part that "[u]pon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention").

Georgia-Pacific, measure a fair licensing fee by creating a hypothetical negotiation (assuming a willing licensor and licensee) before infringement has occurred.⁷⁶ Although none of the wide-ranging factors in the *Georgia-Pacific* test are explicitly economic in nature, most modern courts interpret them as guidelines for the inescapably economic endeavor of setting an efficient licensing fee.⁷⁷

For the *Georgia-Pacific* test to make economic sense, this negotiation should occur with alternatives to the patented technology in mind, and there is at least one prominent example of the test being interpreted in that manner. Sitting by designation as a trial court judge in a patent dispute between Apple and Motorola, Judge Richard Posner held that cheaper alternatives to licensing the infringed technology act as a cap on damages claimed in a patent case.⁷⁸ Although he ostensibly rejected the *Georgia-Pacific* test as unhelpful,⁷⁹ he did follow its suggestion that damages equal to a reasonable royalty can be estimated by simulating a pre-infringement hypothetical negotiation between the parties.⁸⁰ Speaking as the user in such a negotiation, Judge Posner said, “If we can avoid infringement at \$1 a phone, we will not pay a royalty in excess of \$1 [per phone].”⁸¹ Judge Posner’s logic is compelling: because patent damages are compensatory, they cannot exceed what Apple would have paid in a but-for world where it chose not to infringe Motorola’s patents.

Judge Posner’s logic is easily imported to the FRAND context. If before a standard is established, patent holder A’s technology is equivalent to B’s, then A and B will compete for user C’s business and A and B will ultimately charge C the same rate. If A’s is better than B’s, then A will be able to charge a premium. If A tries to charge more than the incremental value of its technology—that is, if A charges so much that C’s next-best alternative (B’s technology) becomes more attractive—then A will lose the business. Therefore, the premium that A can charge C in a competitive, pre-standard market is constrained by the next-best alternative. Any premium over the cost of that alternative will reflect the incremental value of the technology that economists agree should be the “fair and reasonable” rate.⁸²

C. Practical Difficulties with Measuring Ex Ante Incremental Value

Such a measure of “fair and reasonable” rates would be ideal. However, a court attempting to simulate such a bargain faces serious practical challenges. The trouble with this counterfactual, as with all counterfactuals, is that it requires the clarity of a crystal ball in reverse. To perform the task properly, a judge has to travel back in time and imagine the competitive mindset of the parties and their ambi-

⁷⁶ Lemley & Shapiro, *supra* note 49, at 2018–19.

⁷⁷ *Id.* at 2017–19.

⁷⁸ *Apple, Inc. v. Motorola, Inc.*, No. 1:11-cv-08540, 2012 WL 1959560, at *7 (N.D. Ill. May 22, 2012).

⁷⁹ *See Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 911 (N.D. Ill. 2012) (stating that the *Georgia-Pacific* test is unclear and need not be contemplated to resolve the case).

⁸⁰ *Id.* at 913.

⁸¹ *Apple*, 2012 WL 1959560, at *7.

⁸² *Apple*, 869 F. Supp. 2d at 913.

tions for using the patents. The judge has to estimate the relative bargaining power and skills of the parties and understand the value of trade-offs in high tech patent deals. Perhaps most problematically, the judge has to know the technological alternatives that informed each side's bottom line. Even if all this information is somehow available to the judge, he has to guess how each player would have responded to these incentives given the complex game of high tech competition.

Of all these informational challenges, perhaps the most problematic is knowing the patent user's next-best alternatives. Expert witnesses can help here, but the expert must be well-matched to the question to be answered. In many patent cases, as in Judge Posner's Apple-Motorola dispute, engineers and designers testify about alternative designs that achieve the functionality of patented products or about the viability of designing around the patented technology.⁸³ As Judge Posner observes, that testimony is useful, but only goes so far.⁸⁴ The relevant question in patent damages cases, as well as FRAND disputes, is the cost of the next-best alternative (where best means offering the most benefits for the price). Sometimes the next-best alternative may be to market the product without the infringing feature at all. Engineers, hired to solve design problems and not to conduct cost-benefit analysis of design alternatives or to analyze the marketability of products without certain features, cannot address the next-best aspect of the next-best alternative inquiry.⁸⁵

The information problem is made worse by the fact that technology markets are difficult to understand, let alone predict. The rapid pace of technological change and the ubiquity of network effects make for volatile markets with idiosyncratic winners and losers. Further, high tech products are complex and technical and understanding the role each component plays in their function is essential to estimating the value of patented technology. This presents a daunting task for lay judges. Again, experts can help here, but their participation is not a panacea. Often the only qualified expert on a design issue unique to a particular product is an employee of one of the parties to the suit. Thus his testimony may be self-serving and therefore of little value to the court.⁸⁶

IV. The Hypothetical Negotiation Should Take Place Before the FRAND Commitment

Judge Robart's aversion to the vagaries of counterfactual reasoning was perfectly understandable, but his manner of avoiding it stripped his "hypothetical negotiation" of some of its analytical leverage. The flaw in his method was that he did

⁸³ *E.g. id.* at 905–06.

⁸⁴ *Id.*

⁸⁵ *See id.* (stating that courts should consider the testimony of procurement specialists and project managers because they are in a better position to estimate the costs of alternative solutions). While these kinds of jobs exist in traditional industries, it may be that high tech companies prefer to make procurement and design decisions at the executive level.

⁸⁶ *See Apple*, 2012 WL 1959560, at *9 (explaining that in a negotiation, Motorola would not go to Apple's technical expert to get information about inventing around Apple's patent, so that expert's testimony is of little help).

not go back far enough in time to conduct the hypothetical bargain. Rather than situating it in a moment before the standard was set, he placed the bargain in the post-standard world where FRAND commitments were already in place. In so doing, his holding lacked analytical purchase: “fair and reasonable” rates are whatever rates are reasonable in the FRAND context.

On the one hand, Judge Robart offered a very convincing reason for setting the hypothetical negotiation in the FRAND context. While acknowledging that a “fair and reasonable” rate should reflect the “incremental value of the technology compared to the alternatives that could have been written into the standard,”⁸⁷ Judge Robart rejected this method of measuring FRAND in part because of its “impracticability with respect to implementation by courts.”⁸⁸

He noted that the *ex ante* valuation would require knowing, or at least guessing, how the use of an alternative technology would effect other design choices. This is certainly a difficult judicial exercise, and it is compounded by the fact that a judge would then have to estimate the value of the hypothetical product’s usefulness and popularity with consumers. Indeed, Judge Robart was right to worry about the method’s “lack of real-world applicability.”⁸⁹

But in changing the question to avoid the difficulty of counter-factual reasoning, he ended up asking a much less useful question. At best, a hypothetical negotiation between parties after FRAND could reveal the parties’ best estimate of the *court’s* ultimate FRAND finding. But when a court conducts a hypothetical negotiation to illuminate the meaning of a contract term, the exercise is meant to estimate the private, wealth-maximizing meaning of a term *to the parties*. Thus, hypothetical negotiations can be helpful when a court must determine the contractual effect of an event that the parties evidently did not consider in creating the contract. For example, if a flood ruins the contents of a warehouse, and makes a contract—which was silent on the possibility of flooding—impossible, a judge may consider how the parties would have allocated the risk of a flood if—and here is where the counterfactual comes in—they had considered the issue in the first place.

The *Georgia-Pacific* test, though problematic in other ways,⁹⁰ provides a good example of an appropriate use of counterfactual reasoning outside of the contract interpretation context. *Georgia-Pacific* asks judges to estimate what the parties would have settled on as a reasonable royalty *if* the defendant had not stolen from the plaintiff. It is a way of determining the value of what the defendant stole for the purpose of making the plaintiff whole. Thus the hypothetical reasoning in *Georgia-Pacific* is an exercise designed to put the world right again after a legal wrong has

⁸⁷ Microsoft Corp. v. Motorola, Inc., No. C10–1823JLR, 2013 WL 2111217, at *13 (W.D. Wash. Apr. 25, 2013).

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ See Apple, 869 F. Supp. 2d at 911; Anne Layne-Farrar et al., *Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments*, 74 ANTITRUST L.J. 671, 681-82 (2007).

been committed.⁹¹

So, too, is counterfactual reasoning appropriate in interpreting a contract term such as “fair and reasonable,” but like the *Georgia-Pacific* test it should attempt to imagine a negotiation that the law recognizes as in some way preferable to what happened in the real world. In the FRAND context, that hypothetical negotiation should take place before the standard is set, when patent holders lacked market power, because at that time users could have substituted other technologies that ultimately competed for adoption into the standard. This bargain is necessarily hypothetical, since courts should impute knowledge about product demand and production costs to the parties that did not exist before the standard was set.⁹² Thus legal determinations of “fair and reasonable” rates should answer the following question: “if they knew then what they know now about demand and production, and given all the competition that pre-dated the standard, what royalty would the plaintiff have paid the defendant?”

The problem with choosing a post-FRAND moment for the negotiation is that this negotiation was not hypothetical at all. Motorola and Microsoft did attempt to negotiate after the standard was set and in the context of Motorola’s FRAND commitments to the SSOs, and the very existence of the lawsuit proves that those negotiations failed.⁹³ By simulating a post-FRAND Motorola-Microsoft deal, Judge Robart effectively decided how this negotiation should have gone. That is a useful determination, especially if negotiation has broken down as it evidently had in this case, but it has less analytic leverage than a device—like a hypothetical negotiation before the FRAND commitment—that could estimate the private wealth-enhancing meaning of a term before the dispute arose. Thus, Judge Robart’s confidence rang hollow when he said that “in the context of a dispute over the proper [F]RAND royalty rate, judicial simulation of a hypothetical, bilateral negotiation under the [F]RAND obligation logically will lead to a royalty rate that both parties would have found to be reasonable.”⁹⁴ Once the FRAND commitment was in place, there was no royalty that both parties considered “reasonable,” hence the lawsuit.

That the parties themselves could not negotiate a rate that they both found reasonable—either before or during the suit—illustrates the necessity of providing legal clarity about what FRAND means.⁹⁵ All negotiations over contractual terms oc-

⁹¹ Lemley & Shapiro, *supra* note 49, at 2019.

⁹² Recall that without uncertainty about demand and costs, FRAND agreements never would have been necessary in the first place. See Lemley & Shapiro, *supra* note 3, at n.7 (“Actual *ex ante* negotiations are often difficult or infeasible, in part because not all of the parties with an interest in deploying the standard belong to the SSO.”).

⁹³ Indeed, Judge Robart explained that hypothetical bilateral negotiations are a good way to estimate FRAND rates precisely because they occur in practice and so “there exists evidence of the results of such real-world negotiations that can be used in simulating the hypothetical negotiation.” *Id.* at *14.

⁹⁴ *Id.* at *16.

⁹⁵ See Feinstein et al., *supra* note 1, at 16 (arguing that having more guidance on appropriate FRAND rates would aid standard setting and rate setting).

cur in the shadow of legal intervention. Without a workable and predictable definition of FRAND, these negotiations are bound to fail. Therefore, Judge Robart's opinion should have provided the FRAND context in which such negotiations occur; it should not itself rely on the pre-existence of such a context for its reasoning.

The temporal placement of Judge Robart's hypothetical negotiation undercuts some of the persuasive power of his muscular, mathematical *Georgia-Pacific* analysis. When Judge Robart modified the *Georgia-Pacific* factor pertaining to established royalties to look only to established royalties or customary selling prices for patents already subject to FRAND commitments,⁹⁶ he removed much of the factor's analytic leverage. Looking to the way in which other parties have struggled under uncertainty about what FRAND means after the fact does not directly address the question of what price, *ex ante*, would not reflect hold-up.

Judge Robart's reliance on patent pools was imperfect for a similar reason. A firm's decision to license its patents through pools is, as he observed, made by comparing the advantages of pool membership with what the patent holder believes it can negotiate individually. By setting the FRAND rate for Motorola's technology as equal to what it gave up by not entering the pool, Judge Robart implied that Motorola must have been indifferent as between entering the pool and licensing on an individual basis. There is little evidence, other than the fact that Motorola flirted with the idea of entering the H.264 pool, that Motorola believed the pool value was close to what it could obtain through individual negotiations. It could have expected much more from negotiating with Microsoft.⁹⁷ In fact, this decision to individually negotiate occurred in the shadow of FRAND determinations, since the upper bound of what Motorola hoped to individually negotiate is whatever it believed a court would ultimately find fair and reasonable. Again, Judge Robart's reasoning suffered from circularity because he used Motorola's prediction of what a court would set as a FRAND rate as a proxy for the court's "fair and reasonable" rate.

No doubt Judge Robart understood that his hypothetical negotiation was second-best to a pre-FRAND bargain, but he evidently believed that its benefits to judicial administrability outweighed its costs in analytic leverage. As I have argued, the costs to his analysis were great, but there may be another reason why his trade-off was not optimal. The benefits—analytic ease of a post-FRAND hypothetical negotiation—ought not to be exaggerated. To estimate the contours of a post-FRAND negotiation, Judge Robart needed to speculate about values arguably as difficult to estimate as the pre-FRAND incremental value. A good example is his speculation about the value of patent pool membership to Motorola, as is his assessment that the infringing technology was a small part of Microsoft's ultimate products.⁹⁸ But the interpretive difficulty of a post-FRAND hypothetical negotia-

⁹⁶ *Microsoft*, 2013 WL 2111217, at *18–20.

⁹⁷ Judge Robart himself observed that individually-negotiated rates, even in the FRAND context, tend to be higher than patent pool fees. *Id.* at *80.

⁹⁸ *See generally*, *Microsoft Corp. v. Motorola, Inc.*, No. C10–1823JLR, 2013 WL 2111217, at *12–20 (W.D. Wash. Apr. 25, 2013).

tion is perhaps best illustrated by the opinion's footnote 23⁹⁹, in which he explains the precise mathematical calculation that results in his "fair and reasonable" determination. The note exceeds 1,500 words, contains ten equations, and is extremely complex.¹⁰⁰ It would seem that the "judicial administrability" of Judge Robart's method, purchased at such a dear cost to analytic precision, should not be overstated.

V. SSO v. SEP-Holder: A Better Hypothetical Negotiation?

To Judge Robart, the definition of "fair and reasonable" rates advocated in this paper—the *ex ante* incremental value of the patent over available alternatives—was good in theory but impossible in practice.¹⁰¹ While it seems clear that estimating such a value is extremely difficult, even if aided by heuristics like simulations of pre-standard negotiations between patent holder and patent user, that alone probably does not justify abandoning the effort. And perhaps the hypothetical bargain can be modified to allow for better informational inputs.

As discussed above, the hypothetical bargain that most closely approximates the incremental value of the patent (other than its value as essential to the standard) would be a pre-standard bargain between the patent holder and the patent user. This bargain, while exceedingly difficult to simulate because of informational uncertainties, does closely resemble a bargain that did occur: between the SSO and the patent owners promoting their technology for incorporation into the standard. The bargain is similar because it occurs before the standard is set and because the incentives of the parties are similar. The patent holder in both bargains wants adoption of its technology and is willing to compete on price for the business. On the other side, the SSO's interests are aligned with those of the patent user: both want the best technology with the lowest cost. The patent user wants this in order to maximize its own profit, and the SSO wants this because high performance and low cost further the SSO's goal of widespread adoption of the standard. Both SSOs and patent users presumably consider alternative technologies when attempting to solve a design problem.

Recall that FRAND commitments would be unnecessary if the SSOs and patent holders could agree, *ex ante*, to licensing fees for the patents essential to a standard. Recall also that agreement at that time is impossible because too much is unknown about the future market for the standard and products that rely on it. The counterfactual negotiation, then, would ask "what would the SSO and patent owners have agreed upon as a FRAND rate knowing then what they know now about this market?" This value, which would be (appropriately) influenced by the alternatives available at the time of standard setting, would approximate the incremental value added by the patented technology in question, or precisely the economically efficient definition of FRAND.

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.* at *13.

Simulating a negotiation between the SSO and the patent holder may help alleviate some of the informational troubles that led Judge Robart to abandon his *ex ante* inquiry. To the extent that the hardest part of constructing a hypothetical negotiation between user and holder is knowing the next-best alternative, reimagining the negotiation as between the SSO and the patent holder partially solves this problem if the SSO keeps records of the alternatives it considers. Perhaps SSOs could be encouraged to keep these records and their best estimates of the costs of alternatives, even if the cost-benefit analysis is less formal than one may hope. Members of the SSO could be called as witnesses in a FRAND dispute and testify about their decision-making process. The possibility of later discovery requests may also encourage better record keeping at SSOs and may even result in fairer decision-making procedures, if transparency leads SSOs to place more emphasis on the consumers' bottom line than on corporate patronage.

VI. Conclusion

Although it seems that FRAND commitments have been relatively successful at preventing patent hold-up resulting from standard setting, their efficacy as a private solution to a public problem is limited by the law's inability or unwillingness to affix a meaning to its terms. Judge Robart, in his recent *Microsoft v. Motorola* opinion took on the challenge of reducing a FRAND commitment to a concrete number, but unfortunately, the opinion is less useful as a guidepost to parties and future courts than one might have hoped. Going forward, courts should measure "fair and reasonable" rates by the metric Judge Robart rejected: the incremental value of the patent given the next-best alternative available before the standard was set. To perform this calculation, some counterfactual reasoning is unavoidable, but perhaps it need not be as unmoored as Judge Robart feared. By simulating a hypothetical negotiation between the SSO and the patent holder, rather than between a patent user and a patent holder, courts may be able to supply parties with a sufficiently definite shadow in which to conduct their FRAND rate negotiations.