Reasoning about Reasonable royalties: Evaluating Patent Licensing in Platform Based Industries

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I. Introduction

The assessments of reasonable and non-discriminatory (RAND) royalty rates in licensing agreements have played a central role in several recent high-profile litigations in the information and communications technology (ICT) sector. This paper finds that while there may be a welcome increased awareness of the importance of RAND licensing, many policy proposals for change are misdirected and risk damaging the balance of interests necessary for the success of the standards setting process in standards development organizations (SDO's).

Few observers have a solid understanding of how standards get started and how licencing contracts are negotiated and structured. It is not clear that there is a public policy problem that needs a solution. While there are dusputes around patent licensing, current levels of litigation are given the great importance of standards and IP licensing in sectors such as ICT. The domains, in which disputes occur, are also characterized by extremely high levels of technological change, dynamic competition, and market growth. It would appear that disputes can be adequately handled within the current patent and legal system which has worked well for decades

II. Standards-Setting

Standards provide benefits to developers, manufacturers, and consumers of products and services. In network industries such as telecommunications and computers, it is crucial that products from different manufacturers be able to interconnect in networks and interoperate with products from other manufacturers. It is also important that standards incorporate the best technology. Mobile handsets from one manufacturer must connect to mobile networks and work together with handsets made by other manufacturers. Computer memory chips must work in computers from various manufacturers, and printers must work with multiple computers. Compatibility standards allow this interconnection and interoperability to occur. Moreover, the technology standard functionality must be the best available for the consumer, and not simply that with the lowest royalty burden.

Formal standard setting at standards development organizations (SDOs), such as the ITU-T or ETSI or ANSI, is a cooperative, consensus-based process aimed at developing technical standards for next-generation products in the relevant technical field (in the case of the ITU-T, the field of telecommunications, including wired and wireless communications). The process involves the cooperative efforts of numerous stakeholders interested in the process and in positive outcomes for the user. Stakeholders can have different interests, different business models, and different beliefs, but well chosen common standards will benefit multiple parties

Because standards are being set for the next generation of products, it is not surprising that SDOs and SSOs adopt cutting-edge technology into their standards. That technology first has to be developed; that development involves significant cost, and (not surprisingly) firms seek to patent their innovations, for both "defensive" and "offensive" reasons. As a result, many ICT standards incorporate hundreds if not thousands of patented technologies.

The range of standards-compliant products can vary dramatically, and often dozens if not hundreds of firms make thousands of standards-compliant products. As such, the scope for commercial disagreements between patent holders and those wanting to make, use, or sell standards-compliant products is considerable.

Claims are sometimes made that the patent system as a whole does not work well, particularly complaints that patent office's grant too many unwarranted patents, raising concerns about "patent thickets," "royalty stacking," and "the tragedy of the anticommons." Whatever the merits of such claims, they are directed to the patent system as a whole, not to how well (or poorly) the system of RAND licensing works. They are not something that SSOs can do much, if anything, about.

One obvious difference between firms is the extent to which they have intellectual property rights (notably, issued patents and pending patent applications, which each raise different issues) that may be incorporated into a proposed standard. There are many different business models at work in today's economy. Some firms "wear three hats." As patent holders, they out-license their patented technology to others in order to make standards-compliant products, and as such are "sellers" in the technology market. As manufacturers, they are sellers in the product market. And as manufacturers, they need to have access to others' standards-essential patented technology, and thus are "buyers" in the technology markets.

Other firms do not fit this mold. In particular, pure-play technology firms are sellers in the technology market, but do not participate in the product market. Manufacturers that have no patented technology of their own to contribute or "barter" for cross-licenses are sellers in the product market and buyers (but not sellers) in the technology market. This heterogeneity creates competitive richness. It also sometimes creates a _____ of licensing structures which require understanding.

The economic system needs to reward investors who develop commercially valuable technology. From a societal perspective, royalty payments for the use of patented technology are transfer payments: the licensee pays royalties and thus has less money, but the patent holder receives royalties and thus has more money. To a good first approximation (ignoring the economic costs of rent-seeking behavior and assuming royalties do not materially affect final product demand), the royalty payments might be seen as a "wash." But that is not true from the perspective of particular firms, which naturally are concerned about their own *private* costs/benefits, royalty payments seem quite real. A royalty payment is a private *cost* to the firm paying the royalties, and a private *benefit* to the patent holder that receives the royalties. In particular, firms may have invested heavily in risky R&D to develop the technology that has enabled the downstream product market, and as rational agents, they want to earn a return on that risky investment. Thus, in many cases the level of royalty payments may not be neutral from a societal point of view either, since they affect the returns to technology development and the incentives for further innovation.

Very low royalty rates likely provide miniscule returns to technology developers.It is unlikely that this can be compensated for, by "first mover" advantages in the product market. In particular, the technology developer may not operate in the product market. Moreover, higher unit sales of licensed standardized products might not materialize, i.e. one cannot be sure that a low royalty rate will make up for by volume.

Conversely, a licensor might be disadvantaged in the product market by high costs. Consumers are best served where streams of new products are being developed and are available at competitive prices. Royalties should represent a balance of interests for the technology developer, implementer, and consumer. This balance is at the core of SSO IPR policies and the RAND commitment. Because the standard-setting process is voluntary, firms can elect not to participate if they believe that their interests are not protected. This "participation constraint" implies that care must be taken to adopt IP policies that strike a "balance" between the interests of different stakeholders. The consensus-based nature of the standards-setting process allows SDOs to take account of this need for balance.

There is a fundamental difference between intangible assets such as standards-essential patent rights that can be used as inputs into the production of standards-compliant products and tangible inputs (such as cellular chipsets) that are also inputs into the production of standards-compliant products (e.g., cellular handsets). Once a patent has issued, it is a public document; the patent holder cannot physically withhold from others the ability to use the patented technology, and has to resort to the legal system (and litigation) to seek to compel others either to pay fair compensation for that use or to cease infringing. By contrast, the supplier of a tangible input can refuse to supply the input to those who do not pay for it.

Some argue that there is another difference: intangible inputs are (physically) non-"rival" in use; the fact that one person is using some patented technology to make and sell my products

does not restrict anothers' ability to use the same patented technology to make and sell products. This is fundamentally different from tangible inputs such as computer chips, which are rival in use in the physical sense; namely, you and I cannot incorporate the same physical chip into both of our products. This fundamental asymmetry between intangible and tangible inputs is a key factor affecting the need for owners of intangible patented technology to rely on the legal system, rather than on "self-help" mechanisms such as the refusal to deliver tangible goods to those who do not pay for them. This difference needs to be taken into account when one is asked whether there is "too much" patent litigation.

Put another way, patent rights are not self-enforcing. Parties can and do genuinely disagree in whether one firm is using patented technology belonging to another. Patents may be seen as invalid, as not infringed, or both. There is only some (positive) probability that, if such disputes were litigated, the patent holder would prevail against a putative infringer on validity and infringement grounds.[1] Given the large number of patents declared as being "essential" to some standard—and given the large number of firms making, using, or selling standards-compliant products—there is bound to be some level of disagreement on such issues. This factor has no analogue in the context of physical inputs to the production process. It too, needs to be taken into account when accessing whether there is "too much" standards-related patent litigation.

Because the patented technology already exists (and the cost of developing it is a "sunk cost") by the time manufacturers and designers get around to using it to make and sell standards-compliant products, some argue that one should pay more attention to the interests of manufacturers than the interests of patent holders. Others disagree, contending that it is important to respect both of their interests.

Empirical studies of the private and social returns to innovation demonstrate that inventers generally are undercompensated for others' use of their patented innovations. Accordingly, it is important not to avoid favoring users of patented technology at the expense of the developers of that technology. There are multiple political interests in society willing to harvest today rather than wait for tomorrow when the yield is much higher. Competition policy are usually at the forefront of policies that we _____ to eating ones seed _____. It is a natural consequence of unifying intellectual frameworks that are inherently static. As _____ noted, laureate Ronald Coase has observed, one must save the economy from the economics.

III. Portfolio Licensing and Cross-Licensing

A further important feature of licensing in ICT industries is that licensing, whether of SEPs or other, non-essential patents, typically takes place in the form of broad portfolio licensing and cross-licensing. This has implications for understanding many of the proposals for policy change. For example, it may be difficult to separate out the value contribution of individual

[1]Mark Lemley and Carl Shapiro, "Probabilistic Patents," *Journal of Economic Perspectives* 19, pp. 75–98 (2005).

patents within a portfolio, when these are typically valued and licensed as a group. Cross-licenses are also typically agreed in bilateral market-based negotiations between firms that include a wide range of considerations specific to the individual firms. The cross-licenses may cover a range of technologies and products, and include many other considerations in addition to the essentiality or otherwise of certain patents. Thus the terms and conditions of licensing agreements are likely to differ for each cross-license, and it is often difficult to separate out the various considerations or compare one license with another, sometimes making it difficult to determine whether different licensees are being treated in a "non-discriminatory" fashion.

In fast-moving technology industries such as mobile communications, where many firms are working in similar technology areas, there is a strong likelihood of mutual infringement of each other's patents, often unintentionally. Firms cross-license entire portfolios of patents to be able to develop and use technology without worrying about infringement. This eliminates the costs of designing around one another s patents or searching for possible infringements. Although cross-licenses may identify individual patents, they most often include all of the firm's patents for application in a field-of-use, as well as new patents granted during the license period. There may be exclusions for particular patents. Since parties may risk infringing both essential and non-essential patents, in many cases the parties' motivation for "patent peace" may lead them to cross-license all patents needed in a given field, not just SEPs. Royalty earnings may not be a primary objective.

Although cross-licensing provides freedom to design, this does not mean that cross-licenses are typically royalty free. Royalties are typically determined based on the relative value of each technology. The parties will calculate a balancing payment based on the relative values of the portfolios and each party's expected volume of sales of licensed products. The content, terms, and royalty payments for such cross-licenses are determined in bilateral licensing negotiations. These negotiations can allow for the consideration of complex technical issues and the particular circumstances of the firms involved, including the value of the parties' respective cross-licensed patent portfolios.

For these and other reasons, the typical RAND requirement leaves the terms of such licenses to be decided between the parties, which would normally be via ex post bilateral negotiations. This is reflected in the current patent policy of many SSOs, which specify that licensing terms are left to negotiation between the parties and that the SSO does not get involved in resolving disputes over license terms. These policies are discussed in more detail in the section which follows.

IV. Policies of Standards-Setting Organizations (SSOs)

Standards setting organizations face many policy issues. One is whether to incorporate technologies in standards where those technologies may be covered by patents at the time of the standard setting bodies are deliberation, or subsequently (e.g. if a patent application is successful).

Almost all standard setting bodies have determined that it is discernible to use patented technologies in standards… so long as patent owners, if members of the SSOS, agree to license their patents on RAND terms. To do otherwise would of course deprive society of the benefits of patented technology. Such benefits are often considerable. Not surprisingly, practically all SSOs embrace patents.

10 years ago Lemley (2002) studied the IP policies of 43 SSOss on the telecommunications and computer-networking industries. Lemley pointed out that there was "significant variation in policies among the different SSO's," and confirmed that RAND licensing was the rule. Relatively few SSOs gave much explanation of what those terms mean or how licensing disputes would be resolved. SSO's quite properly leave licensing terms to negotiations amongst the parties.

That lack of specificity as to what RAND means persists in the IP policies studied more recently by Bekkers and Updegrove (2012). They say that "none of the policies attempts to even define what 'fair' or 'reasonable' fees are intended to mean in context. Nor do they state that at minimum, such fees must bear a reasonable relationship to the economic value of the IPR …" They go on to say, "Likewise, 'non-discriminatory' also is left the parties involved to agree upon (or to the courts, if they cannot. Nor are the policies of the study set unusual, as this absence of definitions is normative across virtually all IPR policies." That is, despite a decade of study, commentary, and controversy since the Lemley study, there has been little change in the fundamental issues of what RAND means or how it is to be interpreted. Clearly, SSOS have come to see ambiguity as a benefit, as it allows flexibility and adaptation to particular circumstances.

Some economists associated with competition authorities have endeavored to articulate what an IP policy "should" include, Fiona Scott Morton (2012) has suggested, including that (1) "IPR policies should create as strong a commitment as possible to bind future owners of the IPR to any F/RAND commitments made to the SSO"; (2) "A F/RAND commitment should include a commitment to a process that is faster and lower cost [than litigation] for determining a F/RAND rate or adjudicating disputes over FRAND," which "might include arbitration, alternative dispute resolution within the SSO, an allowed range for a royalty rate, and specification of the base to which a royalty should apply"; (3) "The F/RAND dispute resolution process should require that the licensor specify a cash price for its SEPs to aid in evaluation of the proposed license terms by the third party"; and (4) "The F/RAND commitment should include a dispute resolution process preceding any action for injunction or an exclusion order." We understand that the U.S. Federal Trade Commission (FTC) and European Commission DG Competition (DG Comp), the European antitrust authority, have made similar suggestions as to how SSO rules "should" be amended to address various competition-policy concerns.

We note that none of the SSOs that Bekkers and Updegrove studied—nor, indeed, any other SSO that we are familiar with—have adopted anything like the range of Dr. Scott Morton's

proposals as to what IP policies "should" look like. All of her suggestions would involve changes from the current system, and in some cases very significant changes in procedures. Bekkers and Updegrove found some SSO policies that address the transfer of patents encumbered with licensing obligations, but found that treatments were often unclear and possibly inconsistent, and applied only to some SSOs. They note that some SSOs address transfer issues but struggle to define workable policies, and believe that "transfer of patents… has not yet been satisfactorily addressed in most IPR policies." Beyond this, they do not report any SSO policy procedures aimed to (a) speed dispute resolution, (b) specify cash royalties, or (c) specify a dispute resolution process preceding any action for injunction, in the ways Dr. Scott Morton proposes.

It is clear that SSOs are eschewing these suggestions of the competition agencies. This is no surprise. They are committed to setting standards and one sided approaches (that favor licensees over licensors or vice versa) impair the process and deny members and society the benefit of standards.. They seem to believe that the proposals of academic economists at competition agencies are untried, untested and impractical. As Nobel Laureate Ronald Coase has observed (quoted earlier) is often necessary to save the economy from the economists, as economists are prone to ignore history, institutions and innovation. Many observers fail to understand that the issues at hand are clearly very nuanced. In a 2003 article on "Standards Setting and Antitrust" Sherry and Teece wrote that:

"There is no reason why a 'one size fits all' mandatory-type approach is appropriate. … [W]e believe that the antitrust authorities are likely to give too little weight to the fact that SSOs, as voluntary organizations, must often walk a fine line between competing interests. In our view, ex post intervention runs the serious risk of failing to recognize the ex ante balancing of competing interests."

We would go further. It is one thing to propose that certain rules "should" be adopted on a going-forward basis, to govern future RAND commitments and disputes over them. It is quite another to argue that proposed rules "should" be applied retroactively, to previously adopted standards and previously made commitments (and disputes about them). Many of the current proposals for "clarifying" SSO rules are effectively of the latter, retroactive, sort.

V. The Meaning of RAND

From an economic perspective, a RAND commitment[2] has four main implications:

[2]As noted above, the term "RAND" is more commonly used by U.S.-based SSOs; the term "FRAND" is more commonly used by European-based SSOs. We are not aware of any suggestion that FRAND differs from RAND in any significant way, and the terms are used interchangeably in the literature. In this paper, we use the RAND acronym.

(a) The patent holder must make licenses available. It cannot keep its technology to itself and refuse to make licenses available (which, absent the RAND commitment, it would otherwise be entitled to do).

(b) The patent holder must make licenses widely available to anyone that wishes to make standards-compliant products. It cannot "pick and choose," agreeing to license some (e.g., its business allies) and refusing to license others (e.g., its rivals). And it cannot make just a limited number of licenses available, "auctioning off" to the "highest bidders."

(c) The patent holder must make licenses available on "reasonable terms and conditions," which may include terms and conditions other than royalty rates.

(d) The patent holder must make licenses available on a "non-discriminatory" basis.

Many commentators have focused on the third ("fair and reasonable," or "FR") and fourth ("non-discrimination," or "ND") aspects of a RAND commitment, largely glossing over the first two requirements (that the patent holder must make licenses available to all interested parties), which significantly limits what the patent holder would otherwise be free to do with its patented technology. Yet many SSOs make it clear that it is the requirement that licenses be made available that lies at the core of a RAND regime. That requirement ensures that holders of SEPs cannot block others from making and selling standards-compliant products and thus cannot block the development of competitive markets for standards-compliant products. Conflicts over the ND and (especially) the FR aspects of RAND, by contrast, are at their core commercial disputes over licensing terms. They are examined below.

a. Reasonable

Most SSOs provide little or nothing in the way of guidance as to what "reasonable terms and conditions" (including what "reasonable" royalty terms) means. The ITU-T patent policy, for example, says that the ITU-T will not get involved in disputes over such "terms and conditions," saying that they are "left to the parties concerned."

For many years, some commentators have claimed that the meaning of RAND lacks clarity.[3] Some academics and other scholars have called on SSOs to provide additional details, have provided their own interpretations of what RAND "should" mean in order to achieve certain goals, or have made proposals for "clarification" as to what RAND means.

To take one example, in November 2011, a number of firms (including Apple) made submissions to the European Telecommunications Standards Institute (ETSI) as to how RAND "should" be interpreted, each offering differing interpretations.[4]

[3]See., e.g., Mark Lemley, "Intellectual Property Rights and Standards Setting Organizations," *Calif. Law Review* 90, pp. 1889–1980 (2002).

[4] Jorge L. Contreras, Guest Post: The February of FRAND, PatentlyO law blog (March 6, 2012). Accessed at: http://www.patentlyo.com/patent/2012/03/february-of-frand.html

Following Sherry and Teece, 2003, some commentators have noted that "reasonable" can be interpreted in two different senses: what is reasonable *ex ante*, prior to the standard being adopted; and what is reasonable *ex post*, after the standard has been adopted. The ITU-T patent policy is silent on this issue, merely saying that "negotiations are left to the parties concerned and are performed outside ITU-T/ITU-R/ISO/IEC," and that the ITU-T does not get involved in resolving disputes between the parties over licensing terms and conditions.

Because such negotiations are almost always conducted ex post, one might interpret the ITU-T patent policy as (tacitly) endorsing an ex post interpretation of what "reasonable" means; certainly, nothing in the current ITU-T patent policy (or, for that matter, of any other SSO of which we are aware) explicitly endorses an ex ante approach to determining what is "reasonable."

In addition, in some (though not all) cases, there will be no licenses specific to a particular standards-related patents that were negotiated on an ex ante basis. That is not surprising, as until the standard is formally adopted, the parties will not know precisely what patents will be incorporated in the standard, or the exact value of being able to use the patented technology in connection with standards-compliant products. But this fact makes it difficult to implement an ex ante approach to assessing the "reasonableness" of royalty rates by appealing to real-world ex ante licensing terms. And almost by definition, patent litigation over standards-compliant products occurs ex post, after the standard has been adopted and after firms begin to make standards-compliant products.

As noted, SSOs do not get involved in determining whether proposed license terms are 'reasonable.' Indeed, most SSOs do not require the patent holder to announce its proposed license terms in advance of adopting the standard, but merely require a statement that the patent holder is willing to license on 'reasonable and non-discriminatory' terms. Instead, royalty rates are left to the parties for negotiation. "There are four likely reasons that SSOs avoid addressing the reasonableness of licensing terms.

First, determining whether a particular rate is 'reasonable' often goes beyond the competence and/or expertise of the SSO or its participants. The 'reasonableness' of royalty rates is an economic or business issue, not a technical one. The SSO representatives, generally chosen for their technical knowledge of the technology being standardized, frequently have little or no experience or expertise in negotiating royalty rates or determining what an appropriate rate should be.

Second, trying to determine an appropriate royalty rate is often difficult when technology is changing rapidly, as is often the case in the context of standards for the next generation of products. From an economic standpoint, patent holders are naturally reluctant to quote a royalty rate for their patents in advance. This is especially true because of the asymmetric (one-way) nature of the commitment. Asking the patent holder to commit to a royalty rate prior to the standard's adoption would, presumably, be binding on the patent holder, in the sense that the

patent holder could not increase the rate, though it could always agree to accept a lower royalty. But the rate would not be binding on the prospective licensees. They would have made no commitment to take a license, to agree to pay royalties. Not surprisingly, patent holders are reluctant to constrain their future negotiating position in such an asymmetric fashion.

Third, there are potential antitrust issues that might arise if the SSO (or its members, as potential licensees of the patent) were to try to determine whether a proposed rate was 'reasonable." Antitrust issues clearly would arise if the SSO explicitly conditioned its acceptance (or rejection) of a proposed standard implicating a patent on the asked-for royalty rates. Indeed, even asking the patent holder to announce its proposed rates in advance, and then having the SSO determine whether or not to adopt the standard in light of the announced rates, may be problematic from an antitrust standpoint.

Fourth, SSOs are aware that the issue of royalty rates pits the interests of some participants (the patent holders) against those of other participants (the prospective licensees), and the SSOs do not want to 'take sides' in such matters. Doing so could jeopardize the standard fielding process, which has enough protections built into it anyway.

Concerns or disputes about what "reasonable" means in practice have faced SSOs since at least the 1970s, when SSO IPR policies began to be adopted. We know of no reason why the current situation raises any "new issues" that were not anticipated long ago. The assertion in a recent ITU-T press release that "the definition of what constitutes 'reasonable'… [is] now emerging as [a] major point of contention" strikes us as incorrect. Legal systems rely on "reasonableness" standards when addressing complex and various relationships in which any more "precise" a formula or rule of thumb would inevitably fit in some cases, and not in others. Moreover, the "point of contention" has been there all along, and both the ITU-T and other SSOs have maintained their current policies in place for many years, presumably because many SSOs operate by consensus, and there never was any "consensus" over a need to change the RAND-based IP policy rules, nor any consensus as to how to "clarify" them without undermining the flexibility inherent in the "reasonable" portion of the RAND commitment. against those of other participants. Sometimes a degree of ambiguity (or a lack of clarity) is needed in order to achieve consensus and socially desirable outcomes. Henry Kissinger coined the term "constructive ambiguity" to refer to the deliberate use of ambiguous language in order to advance negotiation and agreement. Ambiguity also allows learning (Trautmann & Zeckhauser, 2010).

To be clear, however, proposals to "clarify" the existing SSO IPR or RAND policies by "reading into" existing RAND declarations requirements not already agreed to do not, in our opinion, amount to a "clarification" so much as they amount to a substantive rewriting of the rules. This affects the respective positions of patent holders and manufacturers of standards-compliant products.

b. Non-discriminatory

Just as with the "(fair and) reasonable" aspect of RAND, most SSOs provide little or no guidance as to how they interpret the "non-discrimination" aspect of RAND. From an economic and public-policy perspective, one can think of the non-discrimination aspect of RAND as having two different facets, which we will term the "process focus" and the "outcome focus" respectively in what follows.

Both focuses take as their starting point the proposition that a licensor should treat "similarly situated" licensees (or prospective licensees) similarly. But "similarly" does not necessarily mean "identically." And the determination of whether two prospective licensees are "similarly situated" raises a host of complicated issues.

The "process focus" acknowledges that the licensing process generally involves back-and-forth negotiations between the prospective licensor and the prospective licensee, in which the parties make tradeoffs among various considerations such as the scope of the license (whether restricted to certain products or fields of use or unrestricted), patents covered, duration of the license, form of payment (whether running-royalty or lump-sum), differences (including the geographic distribution of the licensee's production and sales of licensed products), extent of any cross-license, and a host of other tradeoffs that can vary across different prospective licensees and can vary over time depending on market conditions. Prospective licensees may be concerned that the patent holder is "discriminating" against them during the negotiation *process*, treating some licensees more favorably and others less favorably when negotiating different terms that satisfy the licensee's particular preferences. A non-discriminatory licensing *process* would require that the patent holder respond similarly to different prospective licensees, while still allowing licensees to negotiate terms that suit their particular needs.

By contrast, the "outcome focus" looks at the outcomes of the licensing process, whether in the form of the initial licensing offers or (more commonly) of the terms of the agreed-upon licenses. Using an outcome focus approach, there could be (some degree of) "discrimination" if different licensees paid different royalties for similar license rights.

By way of illustration, suppose that two licensees received otherwise-identical license grants (same patents, same geographic territories, same fields of use, etc.), but one licensee paid a 4-percent royalty while another paid a 5-percent royalty. Looking only at the final *outcome*, one might argue that the result involved "discrimination." But from a process perspective, the *process* leading up to the different license terms might not have been discriminatory. For example, it is a commonplace in countries in which bargaining or haggling is the norm for different buyers to pay different prices for "the same good" as a result of differences in their bargaining abilities or relative bargaining positions. There may have been no "discrimination" in the negotiation *process*—each party to the negotiation sought to achieve the best deal it could, with offers and counteroffers, and during the back-and-forth negotiation process, it can transpire that some buyers are just "better bargainers" than others. By way of contrast, if the seller

resolves that it will treat certain types of buyers differently (e.g., by treating rivals differently than non-rivals, or by treating those who have something valuable to "swap" for a cross-license more favorably than those who do not) during the negotiation *process*, then from a "process focus" perspective the negotiation may be "discriminatory" even if the *outcomes* of two negotiations might turn out to be the same.

We draw this distinction between an outcome and "process focus view of RAND because it reflects two somewhat different, though in many ways complementary, ways of understanding and interpreting what a RAND assurance requires. In our opinion, the two approaches should be used in combination when determining whether or not a prospective licensor complied with its RAND assurance.

We note that *some* sorts of price-setting mechanisms involve situations that clearly are non-discriminatory from both an outcome and process focus perspective. The best known is the Western practice for many mass-market products and services, whereby a seller posts a price for a given commodity with fixed features, sells the commodity at that price to anyone that wishes to purchase at that price, and does not negotiate terms with anyone. Such a "take it or leave it" approach to pricing is common in Western societies, as anyone who has shopped in a supermarket can attest.

But such an approach is much less realistic when the non-price "terms and conditions" of the sale vary depending on the customers' needs. When some prospective licensees want paid-up licenses, others want percentage-based running royalties, and still others want cents-per-unit running royalties—or when some prospective licensees are willing to accept narrower license grants (e.g., only to the licensor's existing patent portfolio, or to a subset of that portfolio) and other prospective licensees want broader license grants (e.g., to include after-acquired patents)—using a simple "take it or leave it, fixed terms" negotiation approach can be entirely impracticable.

Because of these differences, it is not uncommon for different licensees to negotiate licenses with different scope and different licensing terms.

Moreover, overemphasis on an "apples-to-apples"-type "outcome focus" comparison of licensing terms is complicated when license terms or conditions vary. When determining whether two licenses that call for the licensees to pay different running royalties are examined to determine whether the difference in rates is "discriminatory" in the "outcome focus" sense, there is no clear way to go about weighing in to balance the fact that the other, *non*-royalty terms of those licenses, or the conditions under which the licenses were entered into, may be or may have been different.

We do not mean to suggest that a "uniform" licensing policy, in which all licensees selling comparable products receive the same non-monetary terms and pay the same running royalties (whether percentage- or cents-per-unit based), would be inconsistent with a RAND assurance.

By way of analogy, there does not appear to me to be any "discrimination" when a supermarket posts its prices (e.g., $2.59 per box for Cheerios) and charges all customers that same price. But in our opinion, such uniformity is not required, even on an outcome-focus basis, in order to comply with a RAND assurance.

It is worth pursuing the supermarket analogy a bit further. It is commonplace that retailers put items "on sale." Cereal that sold last week for $2.59 per box is now on sale for $1.99 per box for a limited time. After the sale is over, the price will go back up to $2.59 per box. A disgruntled customer who wants to buy when the cereal is *not* "on sale" might argue that he/she is being "discriminated against" because another customer, who bought the cereal while it *was* on sale, paid a lower price for what is otherwise "the same" cereal.

There clearly is a sense in which such limited-time sales are arbitrary. Why should a customer who buys at 10 minutes *before* the sale starts pay a different price than a customer who buys the same product 10 minutes *after* the sale starts? But a strong argument can be made that there is no "unfair discrimination" here. Both customers have the opportunity to buy the item at the then-prevailing price. The fact that the then-prevailing price *changes* over time does not mean that there is any "unfair discrimination."

In particular, a patent holder may give more favorable licensing terms to early licensees in an effort to induce others to take licenses and "validate" its licensing program, as firms are naturally reluctant to take licenses (and pay royalties) when their competitors are not paying. In our view, such a situation is not "discriminatory" in any economically meaningful sense.

VI. Effectiveness of RAND-Based Policies

Some might agree that ambiguities as to what RAND means will necessarily cripple the licensing of standards essential patents. As discussed below, this does not appear to be the case. One way to examine that effectiveness of RAND-based is to ask whether disputes over RAND issues have deterred or delayed the adoption of industry standards. Using that criterion, the answer must clearly be "no." Standards in telecommunications industries have achieved widespread acceptance as technologies have moved "downmarket" to reach ever-increasing segments of the industry. New innovative standards-compliant products are regularly introduced at ever-more-attractive quality-adjusted prices. Entry by new firms into developing and making standards-compliant products is common. Entrenched market shares have been eroded by new firms and new products. Licenses to use standards-essential technology are widely available; even though there are occasional disputes over licensing terms, we are not aware of any outright refusals to make licenses available on terms that the patent holder considers FRAND (though the prospective licensee may disagree, arguing that the rates being sought are excessive). In what follows we present a couple of case studies to illustrate.

a. The H.264 Standard

The ITU-T's H.264 video codec standard has become the most widely used video codec, supplanting earlier codecs like MPEG-2, H.263, and MPEG .MOV. Tens if not hundreds of millions of H.264-compliant products are available from thousands of sellers. The H.264 standard has been adopted by numerous broadcast sources.[5] One news article reports that the percentage of videos encoded using the H.264 standard increased from 10 percent in January 2010 to 80 percent in December 2011.[6]

In connection with the H.264 standard, the ITU-T website lists several hundred patent declarations made by numerous patent holders, offering to make licenses available on RAND terms. Many of those declarations are what might be termed "general" or "blanket" declarations, stating that the patent holder would make licenses available for any of its patents that turned out to be essential in order to practice the standard. Such blanket declarations can be contrasted with patent-specific declarations, in which the patent holder listed specific patents and agreed to make licenses available for those specific patents. The fact that many of the declarations are blanket declarations, intended to apply to whatever patents the declarant may have that are "essential" to practice the standard, means that it is not possible to determine the number of declared-essential patents.

MPEG LA, a private entity not affiliated with MPEG, has formed an H.264 patent pool, bringing together 29 holders of several hundred H.264-essential patents from numerous countries, [7] making available a (limited) "one stop shopping" license to all of the patents in the pool. According to MPEG LA's website, 1,149 firms have taken licenses to the pool's patents.[8] Other patent holders of H.264-related patents have elected not to participate in the MPEG LA H.264 patent pool.

Two H.264-related disputes have received some significant publicity. We are aware that Motorola Mobility sent a letter to Microsoft offering a 2.25-percent royalty rate for its H.264-related patent portfolio, on which Motorola Mobility had made RAND commitments. We are also aware that Microsoft did not make a counteroffer to Motorola, instead choosing to immediately file suit against Motorola in Federal District Court in Washington State, alleging that Motorola's offer was inconsistent with Motorola's RAND commitment and alleging that Motorola was violating U.S. antitrust laws by making the 2.25-percent offer. We are aware that Motorola was following its usual practice of seeking a 2.25-percent royalty rate for *any* of its

[5] "List of video services using H.264/MPEG-4 AVC," Wikipedia. Last modified November 1, 2012. Accessed at: http://en.wikipedia.org/wiki/List_of_video_services_using_H.264/MPEG-4_AVC
[6] Ryan Lawler, "4 out of 5 videos are encoded in H.264," gigaom.com (December 19, 2011). Accessed at: http://gigaom.com/video/h264-80-percent-of-videos/
[7] "AVC/H.264 Licensors," MPEG LA, LLC (2009). Accessed at: http://www.mpegla.com/main/programs/AVC/Pages/Licensors.aspx The licensors include firms such as Apple, Cisco, the Fraunhofer Institute, France Telecom, Samsung, LG, Sony, and others. A list of the patents included in the pool is available at http://www.mpegla.com/main/programs/avc/Documents/avc-att1.pdf
[8] "AVC/H.264 Licensees," MPEG LA, LLC (2009). Accessed at: http://www.mpegla.com/main/programs/AVC/Pages/Licensees.aspx

standards-essential patent portfolios when it made the offer, and that Motorola made a similar offer to Microsoft for a (non-cumulative) 2.25-percent royalty for its 802.11-related patent portfolio.

We note that Google, which recently acquired Motorola Mobility (and its patent portfolio) for some $12.5 billion, has announced that it intends to continue Motorola's policy of licensing its patents to others, implying that Google believes Motorola's licensing practices were consistent with its RAND commitments.

We are aware that Microsoft contended both that Motorola's proposed royalty *rate* (of 2.25 percent) and *base* (of the selling price of Microsoft's accused Xbox products, which had features beyond the H.264 and 802.11 features) were both inconsistent with its RAND commitments. Microsoft contended that it was inherently inconsistent with RAND principles for the royalty base to be the selling price of the entire complex product (the Xbox).

We are aware of other H.264-related patent litigation, notably several lawsuits initiated by Multimedia Patent Trust (MPT), an irrevocable trust formed by Lucent to hold and manage certain video codec patents developed at Bell Labs and formerly held by Lucent, against a number of industry participants, including Microsoft (which ultimately settled with MPT), DirecTV, Apple, LG, and Canon. Over the years, MPT and Lucent have entered into some 40 patent licenses for their H.264-related patents. MPT is currently seeking "reasonable royalty" damages consistent with the terms of MPT's licensing program, which asks licensees for a royalty of 0.5 percent on devices capable of decompressing video files and 1.0 percent on devices capable of compressing video files, with a $1.50-per-device minimum. We are also aware of litigation between MPEG LA and MPT, in which MPEG LA contended that MPT had committed to license certain of its compression patents through MPEG LA's MPEG-2 patent pool.

None of these lawsuits have had any apparent effect on the widespread acceptance of the H.264 standard, which is reported to be the most widely used video codec. That is, though there are commercial disputes between patent holders and implementers of the standard over license terms, and those disputes have occasionally risen to the level of litigation, we have seen no indication that patent holders are refusing to make licenses available, or that they are attempting to block the rollout of the standard, or that industry acceptance of the H.264 standard has been delayed or impaired because of such commercial disputes.

b. Cellular Communications Standards

Similar conclusions apply to cellular communications standards such as the GSM, UMTS, and LTE standards developed by ETSI, which has a RAND licensing policy similar to that of many other SSOs. There are thousands of SEP patents relating to those standards, and there has been a significant amount of litigation relating to those patents, but the standards have been widely implemented in practice, with rapid market penetration, substantial new entry, rapid

technological progress, marked swings in market share as new firms have entered with attractive new products at attractive price points, etc. Other commentators have pointed to the lack of evidence that concerns about RAND have delayed or derailed implementation of telecommunications standards[9]; despite large numbers of comments by interested parties and by academic scholars, the prospect that there are significant pragmatic complications with the way that SSO's RAND policies have worked out in practice seems to be largely a non-issue.

Despite the unsubstantiated criticism, RAND has worked very well in practice. It has been an underpinning of the extremely successful standards collaborations between developers, manufacturers, and users that have been a basis for the enormously successful growth of industries such as telecommunications and computing over several decades. During that period (e.g., for at least 20 years for mobile communications since GSM standards were set around 1990), the basic RAND commitments for the main international SDOs have remained fundamentally unchanged other than relatively minor adjustments.

For example, in 2011 sales of 3G UMTS phones were at all-time highs. From 2004 to 2011 as tracked by IDC, unit shipments of UMTS-compliant phones increased substantially from nearly zero in 2004 to nearly 450 million units in the world and over 50 million in the United States in 2011. The dollar value of shipments of 3G UMTS phones increased to more than $180 billion in 2011 from under $60 billion in 2007 worldwide, and the dollar value of shipments in the United States alone reached $25 billion in 2011 from $4 billion in 2007.

Much of this growth has been driven in the last year or two by the increase in sales of the most technologically advanced smartphones. Unit shipments of 3G UMTS smartphones were more than 350 million in 2011 worldwide, increasing substantially from under 100 million in 2008. In the United States, unit shipments of smartphones were 40 million in 2011, increasing from 10 million units in 2008. The smartphone dollar value of shipments increased worldwide from around $50 billion in 2009 to $100 billion in 2010 to more than $160 billion in 2011. The dollar value of shipments related to smartphones in the United States increased to more than $20 billion in 2011 from $10 billion in 2009.

Another indication of the success of a standard is the number of companies that introduce products that are compliant with that standard. The number of vendors in the United States and the world that offer phones compliant with the 3G UMTS standard increased from under 15 vendors in 2004 to over 75 vendors in 2011, including over 20 new vendors in just the last two years. The number of vendors selling 3G UMTS smartphones shows a similar pattern. In the United States, IDC shows that 18 vendors sold 3G UMTS smartphones in 2011, up from just 2 in 2006. The number of 3G UMTS phone models available tells a similar story. The number of handset models available in the United States that are compliant with 3G UMTS increased from

[9] See Damien Geradin, Anne Layne-Farrar and Jorge Padilla, "The Complements Problem within Standards Setting: Assessing the Evidence on Royalty Stacking," *Boston University Journal of Science and Technology Law* 14(2) (January 8, 2008). Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=949599

3 models in 2006 to 88 models in 2010. Clearly, many companies are investing resources to develop new products that are compliant with the 3G UMTS standard. There is no sign that this process has been slowed down by patent disputes. Put another way, though there are disputes in connection with cellular communications standards, there is no indication that the current RAND system is causing any significant problems.

c. Excessive Litigation?

We have not attempted a formal review of the level of litigation in ICT against the level of economic activity in these industries, but it seems that the volume of litigation is at least commensurate with the large number of patented technologies used to make standards-compliant products, high rates of sales and earnings growth in the industries, and very high levels of competition. As firms try to introduce progressively advanced technologies and compete with new generations of products, such as in smartphones and tablets, it is hardly surprising that there will be major commercial disputes.

It should also be noted that much of the current litigation involves non-SEPs as well as SEPs. For instance, the headline-grabbing litigation between Apple and Samsung began with Apple accusing Samsung of infringing non-essential IPR related to the "look and feel" of Apple's products. This indicates that patent law and injunctions are not specifically SEP issues. This may also be further evidence that these are primarily commercial disputes with RAND as one potential aspect, rather than indicative of a "RAND problem" per se.

We have not seen any empirical evidence that would allow us to confirm or deny the ITU-T's statement that there has been an "uptick" in SEP-related patent litigation. But even if that assertion were correct, it must be put into context. The number of patents and standards, and presumably the number of SEP patents, has increased dramatically in recent years. One would expect that a significant part of the suggested increase in SEP-related patent litigation would be just the natural consequence of an increase in the number of patents or standards generally, the number of SEP patents, or the rapid increase in the dollar and unit volume of standards-related commerce.

We are aware of one empirical article on the "patent litigation explosion" that sought to control for certain factors (notably research and development (R&D) spending and the total number of patents),[10] but the authors do not control for the increasing role of standards, or the increasing economic importance of standards-compliant products in certain markets, and thus the increasing economic stakes associated with SEP-related litigation. We are not aware of any empirical evidence that litigation related to SEP patents has increased more rapidly than the rate of patent litigation generally, once these factors have been taken into account.

[10] James E. Besen and Michael J. Meurer, "The Patent Litigation Explosion," Boston Univ. School of Law Working Paper No. 05-18 (October 20, 2005). Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=831685

We note that there are a number of lawsuits related to SEP patents in the ICT space, but there are also numerous lawsuits relating to *non*-essential patents, notably Apple's lawsuit against Samsung over its "look and feel" "design" patents on the iPhone and iPad, and other non-standards-essential Apple patents, in which Apple recently won a $1.05 billion award against Samsung.[11] The jury rejected Samsung's claims that Microsoft infringed certain patents that Samsung claimed were essential to practice the UMTS standard. The present litigious atmosphere is not limited to SEP patents, and changes in RAND policies would not affect non-essential patents.

Any time that there is as much money at stake as there is in telecommunications, and any time many firms are accused of using other's patented technology without taking licenses and without paying for it, there is bound to be some degree of friction, with high-profile litigation attracting much publicity and much attention. But the actual degree of disruption is small in the overall swing of things.

VII. Assessing Proposed Policy Changes:

Section VI noted the great success of innovation in ICT. A series of mobile telecommunications standards, embedding new and improved technologies, have been developed and implemented. The industry is one of the most dynamically competitive in all users are very significant.

Nevertheless, new policy proposals have been revised. They are addressed below.

a. Barring Injunction Relief

As a general rule, patent holders have the right to seek injunctive relief when others make and sell infringing products, though (under U.S. law, at least) patent holders are not "entitled" to such relief; they must satisfy a four-factor test laid out in the Supreme Court's 2006 eBay decision. Proposals that making a RAND commitment is inconsistent with seeking injunctive relief amount to the suggestion that, by making RAND commitment, a patent holder has waived the right (that it otherwise would have) to seek injunctive relief. We do not purport to render legal opinions, but we understand that the general principle is that waivers of rights must be unambiguous and are not to be inferred lightly. More importantly, SSOs have consistently decided that a RAND undertaking does not require a waiver of ordinary patent law remedies by SEP holders.

We understand that, under the four-factor test under eBay, the courts consider (a) whether there is "irreparable injury," (b) whether legal remedies are adequate, (c) the balance of harm, and (d) the public interest in deciding whether to grant injunctive relief; and the fact that a patent

[11] Nick Wingfield, "Jury Awards $1 Billion to Apple in Samsung Patent Case," *The New York Times* (August 24, 2012). Accessed at: http://www.nytimes.com/2012/08/25/technology/jury-reaches-decision-in-apple-samsung-patent-trial.html?_r=0

holder has made a RAND commitment may be relevant to each of these factors and may thus affect whether a court would grant injunctive relief. But the proposals that RAND commitments are inconsistent with even seeking injunctive relief bypass such considerations in favor of a blanket conclusion that RAND commitments are incompatible with injunctive relief.

Such a proposal, if accepted, would significantly shift the balance of interests away from patent holders and towards manufacturers of standards-compliant products. It would fundamentally take away the strongest bargaining chip that the patent holder has to induce implementers to come to the bargaining table and negotiate licenses. It could (effectively) substitute a court-ordered "compulsory license" at court-determined "reasonable royalty" patent infringement damages terms for a negotiated license. It would deprive the patent holder of the ability (that it otherwise would have) to negotiate cross-licenses with infringers. It would put the patent holder at the disadvantage of having to litigate on a country-by-country, patent-by-patent basis, rather than negotiating a worldwide portfolio license. In sum, it would alter the balance of interests of innovators and implementers and threaten the longer-term viability of standardization and incentives to innovate.

We believe that it is worth assessing whether RAND commitments are inconsistent with an ITC exclusion order under Section 337. First, the only remedy that the ITC can award in a Section 447 case is an exclusion order; it does not have the statutory authority to award money damages or compulsory licenses. Consequently, if RAND commitments were to be interpreted as being inconsistent with injunctive relief and/or exclusion orders, then the ITC will essentially be unable to award any effective relief in disputes where a RAND commitment has been made, as it will have no statutory authority to grant relief to a successful petitioner. Given the widely recognized benefits to patent holders from the streamlined process available in the ITC (as compared with district court patent infringement litigation), such a rule would shift the balance of interests toward accused infringers and away from patent holders. Consequently, we agree with the ITC's Office of Unfair Import Investigations' conclusion that "the mere existence of a RAND obligation does not preclude issuance of relief at the Commission."

ITC can take into account in exercising its authority under Section 337. Under Section 337, granting an exclusion order following a finding of infringement of a valid patent is not mandatory; the ITC has some discretion not to grant such an order after considering the four public interest factors described in Section 1337(d)(1), though the presumption is that an exclusion order "shall" issue unless the ITC determines that doing so would not be consistent with the four public interest factors.

Some have argued that a RAND commitment should be interpreted as being inconsistent with Section 337 exclusion orders. The proposition advanced in the amicus brief filed by 19 economics and law professors in ITC Investigation No. 337-TA-745 that "ITC relief should generally not be granted under §1337(d)(1) on the basis of patents subject to RAND commitments" would effectively reverse the existing regime (exclusion orders "shall" issue

unless the ITC finds to the contrary) and replace it with a very different regime, one in which (as the authors of the amicus brief propose) "Money Damages [which the ITC cannot by law award], not Injunctions [the analogue of which, exclusion orders, the ITC can award] are the Appropriate Remedy for SEP's Subject to RAND Commitments."

We have no quarrel with the proposition that the fact that a patent holder has made a RAND commitment is one factor that the ITC may consider in exercising its discretion under Section 337; but a blanket default proposition that exclusion orders are inappropriate in Section 337 cases involving RAND commitments would, in our view, fundamentally change the balance of interests between patent holders and standards implementers in favor of the latter and to the detriment of the former.

In particular, in our experience patent holders that have made RAND commitments typically do not want to enforce injunctions (or exclusion orders) per se so much as use an injunction (or the credible threat of an injunction) to induce those practicing the standard to come to the bargaining table and negotiate broad licenses covering all of the prospective licensee's relevant products (not just the particular products found to be infringing in the patent infringement or Section 337 proceeding) and all of the licensor's relevant patents (not just the limited claims found to have been infringed in the patent infringement or Section 337 proceeding).

Equally significantly, absent the credible threat of an injunction or exclusion order, the patent holder may have little in the way of "leverage" to induce the accused infringer to enter into a cross-license granting back the right to use its own patents (whether "essential" or otherwise). As two of us (Grindley and Teece) have discussed at length elsewhere, cross-licensing is quite common in high-tech industries, and the desire for "design freedom" and "patent peace" is a strong incentive to enter into broad portfolio-wide cross-licenses. Money damages limited to the products in suit, and the patents in suit, are not an adequate, "appropriate," or "reasonable" economic substitute for such broad cross-licenses.

In short, given that patent holders, unlike suppliers of tangible inputs into the production process, cannot physically withhold their patented technology, but instead have to rely on the legal system to help them protect those rights from unauthorized use by others, imposing restrictions on the ability of patent holders to seek such relief would tilt the balance away from patent holders and toward accused infringers.

b. Royalty Caps

To our knowledge, no one has suggested that any SSO's current patent policy amounts to imposing a Capped Numerical Proportionality (CNP) regime on RAND royalties. And we are not aware of any explicit CNP proposals that have been made many SSOs. However, several academics and various litigants have made CNP proposals.

Conceptually, there are a number of major problems with such proposals. First, there is no a priori reason why cumulative royalties should be capped at any particular level. Patented

technology can account for a relatively high or small fraction of the total economic value of standards-compliant products. In fast-paced, cutting-edge technological fields such as ICT, patented technology may account for a significant fraction of the increased value of standards-compliant products over older generations of products, as anyone familiar with the technological advances of today's cellphones over earlier-generation cellphones can readily attest. In some technological fields (such as pharmaceuticals), patent protection accounts for a very high fraction (often approaching 90 percent) of the commercial value of patented products, as shown by the fact that, once patent protection expires and a drug goes "off patent," others can make and sell unpatented "generic" versions of the drug that regularly sell for prices on the order of 10 percent of the pre-patent-expiration price of the "brand name" drug. In rapidly changing technology areas (such as ICT), where innovation is fierce and where (on a quality-adjusted basis) product prices have been falling significantly over time, there is no a priori reason why any particular cap—and certainly not one in the 5- to 10-percent range—is economically appropriate.

Second, there is no reason to believe that the value of different patents (or portfolios of patents) is proportional to the number of patents in the portfolio, even for "essential" patents. Empirical studies show that the distribution of patent values is highly "skewed," with most patents worth little or nothing, and with a relatively small fraction of patents having high values.

Some patents covering fundamental technologies are clearly worth more than other patents on less fundamental but nonetheless "essential" features of a standard, though there is a clear sense in which even a single proven-valid-and-infringed standards-essential patent can be used to exclude others from making and selling standards-compliant products, and hence can be thought of as having an "exclusion value" comparable to that of an entire portfolio of declared-essential patents. The "numeric proportionality" aspect of CNP proposals is widely admitted to be a major weakness; its proponents justify it in practice only because it is cheap, easy, and (relatively) uncontroversial to administer. Counting patents and allocating revenues on a "numeric proportionality" basis is easier than doing the hard digging necessary to examine different patents and determine their relative values.

Again, if some SSO were to interpret its current patent policy and RAND commitments as effectively amounting to adopting a CNP approach to assessing whether particular patent holders were seeking "excessive" royalties, that would amount to a wholesale rewriting of that policy.

It would be one thing for some SSO to explicitly adopt a CNP approach toward RAND on a going-forward basis, as patent holders would have a clear understanding of what they would be getting into. Patent holders who thought that a CNP approach would undercompensate them for others' use of their technology could elect not to participate in the SSO, or could refuse to make CNP-based RAND commitments. It would be quite another thing to try to apply a CNP approach retrospectively to RAND commitments made at a time when there was no suggestion whatsoever that the SSO would rewrite its policy to adopt such an interpretation of RAND. And we see

nothing in the current policy of any SSO that we are familiar with that can even remotely be construed as adopting a CNP interpretation of what RAND means or requires.

c. Ex Ante Royalty Rates

Some commentators have proposed that "reasonable" royalties in the RAND sense should be interpreted in the sense of ex ante reasonable: what would have been negotiated ex ante (before the standard was set) had negotiations occurred then.

One obvious difficulty with making this approach realistic is that, in practice, most (though not all) licensing negotiations for standards-essential patent licenses (other than broad portfolio-wide licenses, which can be entered into at any time) take place ex post, after the standard has been set and after the parties have some basis for determining which patents are standards-essential and which are not. Before the standard is finalized, that issue is still "up in the air."

We do not intend to suggest that finalizing the standard eliminates all disputes about whether particular patents are or are not "essential" in order to practice the standard; as noted above, such disputes usually persist until they are resolved by litigation of the asserted claims to the patents in suit, when patent claims are interpreted (construed) by a court and disputes over validity and infringement are litigated (to a jury in the U.S.). (Note that such litigation, of only the asserted claims of the patents in suit, does not resolve disputes about other, unlitigated patents and/or claims.) Consequently, there are typically no "benchmark" ex ante negotiated rates against which to compare the rates that patent holders are seeking, to determine whether they satisfy the ex ante reasonable test.

This does not eliminate the possibility of using the ex ante approach as a hypothetical construct. In patent litigation, U.S. courts often appeal to a "hypothetical negotiation" that is supposed to have occurred at or around the date of first infringement, despite the fact that no such negotiations may actually have taken place. In the hypothetical negotiation, the parties are assumed to agree that the patents in suit are valid and infringed, thereby taking away one of the main real-world reasons why parties do not actually come to an agreement about license terms.

Swanson and Baumol (2005) have proposed that RAND royalties should be interpreted as the rates that would have been agreed to if the SSO had conducted an ex ante auction, with different firms "bidding" to have their technology incorporated in the standard, with the "bids" being a combination of the technology itself and the royalty rate that the patent holder proposes to charge if its technology is incorporated into the standard. Ignoring for now both the pragmatic difficulties in setting up and running such an ex ante auction and determining what the "winning" bids are, and the limited information that patent holders would have available to them to decide what rates to "bid" (making it unlikely that the outcome of any such auction would have economically desirable properties like equilibrium behavior or economic efficiency), the

fact is that no SSO operates that way. The closest are the efforts by VITA and the IEEE to get patent holders to reveal their "not-to-exceed" royalty rates, but neither is the economic equivalent of the Swanson-Baumol "auction" process. In practice, as noted above, the IEEE process has been a "bust" in terms of actually eliciting "not to exceed" royalty rates. And announced not-to-exceed rates may not provide much information about the rates that would have resulted had there been actual ex ante negotiations.

Lemley and Shapiro have proposed using an ex ante approach to determining whether proposed royalty rates are "reasonable," contending that allowing the patent holder to charge royalties that are ex post reasonable results in significant "hold-up" problems and excessive royalties. Their analysis and conclusions have been criticized by others, notably Elhauge and Sidak. Our point is that there is no reason to believe that the historical RAND policy of any major SSO has adopted an ex ante interpretation of what is "reasonable," and that adopting such a policy (especially if applied retroactively to previously made RAND commitments) would result in a significant change in the relative positions of holders of SEPs and manufacturers seeking to make standards-compliant products.

d. Restricting the Royalty Base

As noted above, we are aware of some proposals (notably Apple's "common royalty base" proposal) that RAND requires that the royalty base on which RAND royalties are to be calculated should be something less than the full selling price of the licensed products. In her presentation, Dr. Scott Morton proposed that an SSO could adopt a "specification of the base to which a royalty should apply." Such proposals are sometimes made on the basis that, in some countries, it is not legally appropriate to calculate "reasonable royalty" patent infringement damages on the selling price of the entire product unless certain conditions are met. In particular, in the United States, the "entire market value rule" legal doctrine provides (to oversimplify a complex topic somewhat) that, in awarding "reasonable royalty" damages for infringement of some patent that reads only on one feature of a complex product, it is not legally appropriate to use as the patent damages base the entire selling price of an entire complex product unless the patented feature is "the basis for" consumer demand for the entire product.

There are a number of points worth making here. First, to the extent that RAND-reasonable should be interpreted as "commercially reasonable"—i.e., consistent with common industry practice—the fact is that percentage-based royalty rates in negotiated licenses often use as the royalty base the licensee's "net sales" of the licensed products, typically defined as gross sales minus certain deductions (e.g., returns, certain shipping costs). The practice of calculating royalties due based on the selling price of some other commodity occasionally does happen, but in our experience (having reviewed hundreds of licenses) it is extremely rare.

Second, despite the fact that both "reasonable royalty" patent infringement damages awards and a "reasonable royalty" in the RAND sense appeal to the "reasonableness" concept, we are not aware of any suggestion that, in interpreting what is RAND-reasonable, any SSO has

explicitly indicated that it intends what is reasonable under its RAND policies to be interpreted as being synonymous with what is deemed reasonable under patent infringement damages law.

Simply put, there are a number of restrictions on what constitute reasonable royalties under patent infringement damages law (such as the constraints imposed by the "entire market value rule" in U.S. patent infringement damages law, or the proposition that reasonable royalty patent infringement damages in the United States can only be awarded on infringing products "made, used or sold" in the country during the patent's lifetime) that do not appear to us to have an analogue in what might be "commercially reasonable" in a patent-licensing context (in which it might be perfectly "reasonable," and hence consistent with a RAND commitment, for the parties to agree that royalties will be paid on a royalty base equal to the licensee's worldwide sales revenues from the licensed products until the expiration of the last-to-expire licensed patent).

We are aware that at least one U.S. court has held that, in determining what is "reasonable" in the RAND sense, the court will consider what is "reasonable" in the "reasonable royalty" patent damages sense, applying the well-known Georgia-Pacific factors. We should not be misconstrued as suggesting that what is seen as "reasonable" in the RAND sense is not and should not (or cannot) be informed by what is "reasonable" in the patent-infringement-damages sense, whether as a matter of contractual interpretation of RAND policies and commitments or as a matter of public policy. But we are not aware of any SSO that has explicitly announced that the two are intended to be synonymous.

Third, for an SSO now to suggest that RAND-reasonable is to be interpreted in accordance with the vagaries of different countries' patent infringement damages law could make what is and what is not RAND-reasonable different from country to country. It is clear that patent infringement damages rules differ from country to country. (For example, in Canada, the patent holder may seek an accounting (disgorgement) of the infringer's profits; that remedy has no analogue in current U.S. patent damages law.) (That said, it may well be the case that what constitutes reasonable royalty damages in the patent infringement damages sense is more similar from country to country than patent infringement damages generally; that is a topic we have not fully investigated.)

Fourth, we are not aware of any indication that the RAND policy of various SSOs should be interpreted in a way consistent with Apple's proposed "common royalty base" approach. Again, adopting such an interpretation would seem to us more a rewriting of an SSO policy than a "clarification" of that policy, one that would benefit some firms (those that make products that sell at prices higher than the "industry average") and harming others (patent holders and those who make products that sell at prices lower than the "industry average").

Fifth, from an economic perspective, the royalty rate and base should be commensurate with one another. To take a simple example, it makes no sense to say "apples sell for $2" without specifying the units to which that price is to be applied. Is that $2 per apple? Per pound? Per kilo? Per bushel? Per bag (and, if so, what size bag?)? Similarly, it makes no economic sense to

say "the royalty rate is 2 percent" without specifying the royalty base to which that rate applies. Consider a $10 component that is built into a $100 subassembly that is incorporated in a $1,000 end product. If one believes that a $1-per-unit royalty is appropriate, one can calculate that royalty several different ways: as a fixed $1-per-unit royalty; as a 10-percent royalty on the $10 component (10% of $10 = $1); as a 1-percent royalty on the $100 subassembly (1% of $100 = $1); or as a 0.1-percent royalty on the $1,000 end product (0.1% of $1,000 = $1). All of these are mathematically equivalent (in this simple fixed-proportions example).

In such a situation, it may be administratively easier (and therefore "commercially reasonable") to charge a percentage-based royalty on the selling price of the end product, as that may be the way that the licensee keeps its books (and the selling prices of the component and subassembly may be subject to manipulation if they are not commonly sold separately in commercially appreciable quantities). As long as the rate is commensurate with the base, it should not matter. The problems arise when people propose to set the two independently of one another.

If one proposes that the RAND-reasonable royalty base should be something less than the full selling price of the licensed product, then one would expect that the royalty rate should be adjusted to offset that change in the royalty base.

e. Patent-by-Patent, Country-by-Country Licensing

As for the proposal that RAND commitments require the patent holder to make separate licenses available on a patent-by-patent, country-by-country basis, with the implementer free to "pick and choose" which licenses to take and which to reject, there are a number of problems from an economic and public-policy perspective.

First, we are not aware of any SSO that has explicitly provided that RAND commitments are to be interpreted as requiring licensing on a patent-by-patent, country-by-country basis. We have seen nothing in any SSO IPR policy that is tantamount to such an interpretation.

Second, it is not consistent with industry licensing practice, which is to enter into portfolio licenses, often on a worldwide basis. As such, it is not reasonable in the "commercially reasonable" sense.

Third, such an approach is likely to lead to disputes between the parties as to whether or not the licensee is using the "unlicensed" patents without paying for them. This is especially likely when the parties disagree as to whether particular patents are "essential" in order to practice the standard. Suppose that the patent holder has three patents (A, B, and C) and believes that A and B are technically essential to make a standards-compliant product; and that C, while not technically essential to the standard, is "commercially necessary" in order to make a commercially viable standards-compliant product.

Suppose the prospective licensee agrees that patent A is essential, but denies that patents B and C are and denies that it is using them. So the licensee offers to take a license for A but

refuses to take a license for B and C. Naturally, the patent holder disagrees, believing that B is essential in the "technically necessary" sense and that C is being used in the "commercially necessary" sense, and therefore that the licensee is using those patents (whether it admits it or not). Resolving such disputes means having to resolve the question whether B and C are being used; that would typically require litigating that dispute, which is antithetical to the desire for "patent peace" that typically goes with trying to license patents. Again, this is different from the situation with respect to tangible inputs into the production process, for which the seller typically will not deliver the input unless the buyer pays for it.

Moreover, the patent holder may believe that licenses for all of its patents are necessary (whether in the technically or commercially necessary sense), and may not have separately priced them, instead setting a single rate for its patent portfolio. Requiring the patent holder to individually license its patents on a patent-by-patent, country-by-country basis would require the patent holder to adopt a very different, *à la carte* structure for pricing its portfolio. In order to be able to extract the full value for others' use of its patent portfolio, a patent holder would likely have to resort to litigation across multiple jurisdictions and against many (possibly most) implementers. In other words, rewriting the rules to impose this type of *à la carte* licensing would diminish the incentives for implementers to negotiate portfolio licenses, increase litigation, impose unnecessary additional transaction costs on patent holders, and ultimately diminish returns on innovation and incentives for patent holders to participate in standard-setting.

f. Proposals for Cash-Only Rand Royalties

In her presentation at the symposium, Dr. Scott Morton proposed, "The F/RAND dispute resolution process should require that the licensor specify a cash price for its SEPs to aid in evaluation of the proposed license terms by the third party. Determining if a complex package of cross-licenses satisfies F/RAND will be difficult for a third party, whereas a cash option is more transparent. If the licensee has the option to choose a F/RAND cash price, but instead chooses to cross-license, then clearly it is better off."

Again, we are not aware of any SSO that has adopted such a "cash option" policy. To the contrary, many SSOs allow a patent holder to commit to making licenses to its SEP patents available only if the prospective licensee agrees to "reciprocate" by making licenses to its own SEP patents available to the first firm. This is consistent with the thrust of our (Grindley-Teece) 1997 article on licensing and cross-licensing in high-tech industries, in which we explain that both parties often seek "patent peace" and "design freedom," and in which it is common industry practice to agree to portfolio-wide cross-licenses covering relatively broad fields of use, rather than patent-specific cash-only licenses.

Simply put, Dr. Scott Morton's proposed "cash option" ignores the "commercially reasonable" desire of the patent holder to obtain more than cash-only royalties in exchange for licensing its SEPs. It may want to leverage its patents into a cross-license that covers not only the

licensee's own "essential" patents (in the sense of "technically necessary") but also the licensee's "commercially necessary" and/or "desirable" patents. Whether such an effort is consistent with RAND commitments has been debated in the past, but on our view it clearly is commercially reasonable for a patent holder to seek a broad cross-license that yields both design freedom and freedom to operate. Similar issues arise with "defensive suspension" provisions in licenses; is it permissible for a patent holder that has made a RAND commitment to defensively suspend its out-licenses if the licensee sues the licensor over non-essential patents? We believe that doing so is commercially reasonable (as a way to preserve patent peace) and thus is consistent with a RAND commitment.

As for her suggestion that "determining if a complex package of cross-licenses satisfies F/RAND will be difficult for a third party," it is not clear whether she is referring to the "fair and reasonable" or the "non-discriminatory" prong of RAND. We agree that comparing cash-only licenses to determine if they are non-discriminatory can be easier than comparing "complex" cross-licenses, but this can be overstated. Comparing cash-only lump-sum licenses when different licensees make different products and sell in different product or geographic markets or for different time periods can make determining whether the terms are discriminatory difficult enough. Comparing running-royalty royalty licenses to determine whether the rates are discriminatory can also be difficult if the licensed products, licensed territories, or time periods covered by the licenses are different.

We agree that adding the complexity of cross-licenses makes determining whether there is discrimination more difficult, as it is difficult to compare the value to the licensor of the grant-back contained in the cross-license, given that different licensees have different patent portfolios than can be of different value to the licensor. But in our view, that does not justify Dr. Scott Morton's proposal that "the F/RAND dispute resolution process should *require* that the licensor specify a cash price for its SEPs…" Making "evaluation of the proposed license terms by the third party" easier is not the main public policy goal of RAND commitments; they are designed to ensure that firms wishing to practice the standard will be able to get licenses to the key essential patents that will enable them to do so. We agree with Dr. Scott Morton's "revealed preference"-type point that "If the licensee has the option to choose a F/RAND cash price, but instead chooses to cross-license, then clearly it is better off." But her focus on whether the *licensee* is "better off" taking a cross-license (and thereby paying partly in kind rather than all in cash) rather than taking a cash-only license ignores the interests of the *licensor* in obtaining a cross-license to use the licensee's patents. Both need to be taken into account.

g. Alternative Dispute Resolution

We understand and appreciate the desire to find a lower-cost and/or more efficient and/or responsive mechanism than litigation for resolving disputes. As a matter of public policy, we encourage efforts to resolve disputes more efficiently, though that does not always equate to "faster" or "lower cost." An SSO rule that mandated binding arbitration by a single arbitrator for

all disputes, with strict limits on the amount of time to be taken in the arbitration process, and strict limits on the scope of available discovery, might well be faster or lower cost than the current system, but those considerations have to be balanced against countervailing considerations of fairness, due process, and responsiveness to the parties' needs. For example, back in the early 1990s, ETSI adopted an IPR policy that amounted to a "licensing by default" regime, as well as a requirement of advance declaration of maximum royalty rates, a rule precluding required cross-licenses, and a mandatory arbitration requirement.[12] That policy may have been faster or lower cost than the current system, but the proposal was subsequently rejected by ETSI after numerous participants objected.

Actually coming to agreement on what such an ADR mechanism might look like can be exceedingly complex. SSOs' IPR policies explicitly provide that the SSO does not get involved in determining whether proposed license terms are RAND, leaving such matters to the parties. We are not aware of any SSO that has adopted "alternative dispute resolution within the SSO." Indeed, the policies of many SSOs explicitly acknowledge that the SSO is largely focused on technical issues, and that the SSO is not the appropriate forum for resolving commercial disputes over licensing terms.

ADR processes include both mediation and arbitration. Mediation has well-known limitations. Rules that call for arbitration typically specify the issues subject to arbitration,[13] process for selecting arbitrators, rules or procedures that the arbitrators will follow (including the availability of discovery), remedies that the arbitrators can adopt, mechanisms (if any) by which arbitral awards can be appealed, criteria to be applied to such appeals, and many others.

Whether the ADR is handled by "arbitration" by some third-party entity or arbitration "within the SSO" would appear largely irrelevant, though many SSOs have explicitly adopted policies that they will not get involved in resolving disputes, whether because they do not believe that they have the expertise or competence to resolve them or because of a desire to avoid "taking sides" in disputes between SSO participants. And it is not clear that SSO members would be willing to have disputes over RAND or licensing issues resolved by arbitration.

To be clear, we do not adhere to the Panglossian view that, because no SSO currently has adopted any of ADR's proposals, that fact alone implies that there must be conceptual or pragmatic problems with ADR. We welcome debate about concrete constructive proposals for improving the existing process.

But the fact that no SSO has currently adopted ADR should raise flags that there may be good *reasons* why such proposals have not been adopted, reasons that reflect the consensus-based nature of SSO rulemaking and the quasi-political balance of interests of different SSO

[12] ETSI/GA12(92)3. See Brooks and Geradin, "Taking Contracts Seriously: The Meaning of a Voluntary Commitment to License Essential Patents on 'Fair and Reasonable' Terms," p. 10.

[13] Arbitration limited to issues associated with "essential" patents might fail to resolve disputes between parties over "non-essential" patents.

participants and the constituencies they represent. Despite recent disputes, the current system, in which license terms are negotiated in the shadow of the law and the RAND commitments, seems to work well. We do not pretend that the current system works perfectly; any real-world institution has problems. But in our view, Dr. Scott Morton has not made a convincing case of any need for change.

VIII. "Hold-Up" And "Reverse Hold-Up"

Many commentators, notably the antitrust agencies (FTC, DOJ, DG Comp) are clearly concerned about the potential that patent holders may be able to "hold up" standards implementers, charging higher royalties than the patented technology is worth. In our view, they pay less attention to what we term the "reverse hold-up" issue—the prospect that others will use the patented technology without adequately compensating the patent holder. Given the fact that patent holders (unlike suppliers of tangible inputs) cannot physically withhold from others the ability to use the technology, but instead have to rely on the legal system to enforce their rights, the possibility of a reverse hold-up is a significant issue;

The antitrust authorities are concerned about the litigation costs facing accused infringers, but they seem to pay less attention to the litigation costs that patent holders must incur in order to enforce their rights (especially on a country-by-country basis around the world). The stakes in patent infringement litigation are asymmetric: patent holders "risk it all" every time they litigate (because an adverse ruling on validity will have collateral estoppel effects on its ability to assert the patent against others), while defendants face no such risk (though they face a "public good" problem in that a single defendant that incurs costs to show that a patent is invalid or not infringed confers uncompensated benefits on other accused infringers, and thus has a societally inefficiently low incentive to challenge patents).

We have been involved in patent infringement damages cases where, in connection with patent infringement damages, the parties are very far apart (by a factor of on the order of 100) in their proposed "reasonable royalty" damages figures. If the defendants were to prevail in their positions, that would have the effect of reducing the return on successful innovation. And it is well recognized by students of comparative organizational behavior that the courts are not well suited to determine prices; voluntary market transactions are generally more efficient and effective at setting prices than are courts. In our view, concerns about the prospect that "hold up" may raise the costs that implementers face have to bear to make standards-compliant products must be weighed against the potential for "reverse hold-up," which can reduce the return to successful innovation and undercompensate technology developers.

Possible Adverse Consequences Flowing from trying to Tilt Policy to Licenses.

SDO RAND-based IPR policies have stood behind standards setting for many decades, during which time standards have formed the basis for some of the most progressive and

competitive technology-based industries. There have been periodic calls for "reform" of the existing RAND-based system, with its (supposed) "lack of clarity." Yet with few exceptions, most SSOs—meaning the different stakeholders that comprise their membership—have concluded that the existing RAND-based rules have served the varied industries that rely on standardized technologies well and therefore resisted proposals to modify (or "clarify") those rules.

Two historical examples illustrate the fact that attempts to substantively reform the RAND-based licensing model prevalent amongst most major SSOs are neither desirable nor free of unintended adverse consequences. In 2007, the IEEE sought and received a "business review letter" from the U.S. Department of Justice, in which the DOJ said that it would not oppose an IEEE proposal to change its IP policy to *allow* (but *not* require) those making RAND commitments to specify on an ex ante basis the "not-to-exceed" terms and conditions that they would seek in order to license their standards-related patents, and allowing the IEEE members to discuss those disclosures while deliberating proposed standards.[14]

The VMEbus International Trade Association (VITA), another SSO, received a business review letter in which the DOJ said that it would not oppose a change in VITA's IP policy under which VITA *required* those making RAND commitments to specify on an ex ante basis the "not-to-exceed" terms and conditions that they would seek from potential licensees, but under which VITA was *not* allowed to discuss those commitments when setting standards.[15]

Available evidence suggests that at least one firm (Motorola) chose to quit VITA rather than disclose its licensing terms, and available evidence suggests that there has been *almost no* ex ante disclosure of not-to-exceed licensing terms to the IEEE. To our knowledge, no other SSOs have followed the lead of either VITA or the IEEE in requiring (or requesting) ex ante disclosure of either not-to-exceed or actual licensing terms.

IX. Conclusions

SDO IPR policies and RAND commitments have stood behind major standards setting activity now for around 40 years, since at least the first formal IPR policies of ANSI and international SDOs in the mid-1970s. During this time, RAND policies have been critical in ensuring a balance of interests between developers, implementers, and users that has allowed the various participants to work together in a consensus. Standards in industries such as ICT—which rely centrally on anticipatory standards to ensure that products from different firms can work together in networks—have been a basis for successive generations of new products. They have underpinned enormous success of these industries in terms of economic growth and technological change.

[14] The IEEE business review letter can be found at http://www.justice.gov/atr/public/busreview/222978.pdf
[15] The VITA business review letter can be found at http://www.justice.gov/atr/public/busreview/219380.htm

During this time, there have been only relatively minor adjustments to SDO IPR policies. Current suggestions for IPR policy modifications risk damaging this balance of interests and should be considered very cautiously and from as broad a viewpoint as possible. The discussion here illustrates some of the particular concerns.

We also suspect that there is no clear evidence that the system is failing in any fundamental way. Although the current level of litigation may look high, and has certainly brought standards-related disputes a far higher profile than might have been thought possible some years ago, this must be seen in the context of the size and growth rates of ICT industries, the high rate of technological change there, and the extreme focus on dynamic competition. Also, this litigation is not limited to SEPs—some of the most strongly defended patents are not cited in standards but derive value from their commercial importance.

In network industries such as ICT, standards setting is part of the framework of competition. Firms cooperate and compete during standards setting to have their technologies included in one standard and also in competing standards. These standards can then form a foundation for further development and allow for competition in the marketplace between competing standards and between competing products that comply with one or more such standards. RAND is a critical part of this, aimed to assure SDO members that the technologies incorporated in the standard will be made available to implementers, and that the firms who own those technologies will not be able to obtain an inappropriate competitive advantage if their proprietary technology is included in the standard and adopted by others. This is an ongoing process, since other firms may develop new technologies and applications following on from the standard technology, to develop both enhanced applications of the standard and new generations of standards.

In this respect, it may be misleading to treat essential patents in a fundamentally different way than non-SEPs. Both may be implicated in products. As a practical matter, SEPs may be used together with "commercially desirable" patents; both may be valuable. In particular, the impact of any possible market power attributable to the standard must be balanced against the very significant RAND limitations on how the patent owner may exercise its rights, as well as the substantial benefits to the industry as a whole conferred by standards.

In this context, RAND may be seen essentially as a contractual commitment. The recent litigations may be seen primarily as commercial disputes, with the RAND framework affecting some but not all of the patents involved. From the discussion above, these disputes may be most appropriately dealt with within the current system, not by a fundamental change to an SDO IPR policy regime that has worked well to reconcile diverse interests.

Efforts to "clarify" RAND policies should be undertaken carefully, so as to avoid favoring some stakeholders at the expense of others. It is one thing to adopt new and clear going-forward rules to govern future conduct. It is quite another thing to modify the relative rights and obligations of participants by purportedly "clarifying" disputed issues.

We think it is important to draw a distinction between "clarifying" existing rules or policies and adopting new substantive policies on a going-forward basis.

Rules can be "unclear" for a number of different reasons. A new situation may have arisen that was not contemplated when the original rule was adopted, and the issue becomes how to resolve the (newly emerged) uncertainty. This we favor. On the other hand, the situation may have been just as unclear when the current rules were adopted as they are now.