**DRAFT**

# The FRAND Licensing Regime in a Standard-Setting Environment: "If it ain't broken don't fix it"

Damien Geradin & Miguel Rato[*]

## I. INTRODUCTION

Standard-setting activities, which aim to achieve device interoperability and product compatibility, play a fundamental role in fostering innovation and competition in a variety of markets. Such activities, typically carried out by armies of engineers, would generally not be expected to fascinate lawyers and economists. But they do - and they have recently received much attention as a result of high-profile cases,[1] complaints lodged with competition authorities,[2] and attempts by members of Standard-Setting Organizations ("SSOs") to have their rules and procedures modified to prevent allegedly anti-competitive outcomes.[3] There seems to be a growing perception, largely fed by certain interest groups, that current standard-setting procedures generally based on the so-called FRAND licensing regime[4] unduly allow opportunistic holders of Intellectual Property ("IP") embedded in a standard to extract excessive royalties from their licensees.[5]

Against this background, the objective of this paper is to demonstrate that the existing FRAND regime works. Ongoing proposals to alter it by tilting the bargaining position of licensors, in particular that of pure innovators, in favour of licensees are not only unnecessary, being based on false premises, but would also prove detrimental to investment and innovation. Fortunately, these attempts, and in particularly those to

---

[*] Damien Geradin is Professor of Competition Law and Economics and member of the Tilburg Law and Economics Center (TILEC) at Tilburg University and Professor at the College of Europe in Brussels. He is also Of Counsel at Howrey LLP. Geradind@howrey.com Miguel Rato is an associate at Howrey LLP and a former référendaire at the Court of First Instance of the European Communities. Ratom@howrey.com Both of them are part of a team that represents Qualcomm Inc. in the context of a pending competition case before the European Commission. The views expressed in this paper cannot be attributed to Qualcomm Inc. or any other clients of Howrey LLP. The authors would like to thank, in no particular order, Anne Layne-Farrar, Michael Hartogs, Trevor Soames, A. Jorge Padilla, Richard Taffet, Alison Oldale, Roy Hoffinger and Nicolas Petit for their valuable comments and suggestions.

[1] See for instance David T. Beddow and Gregg H. Vicinanza, "FTC Charges Rambus With Abuse of Standard Setting Process", Electronic Newsletter of the Intellectual Property Committee, American Bar Association (ABA) Section of Antitrust Law, 21 June 2002, available at http://www.abanet.org/antitrust/committees/intell_property/june21.html; For a recapitulation of the well-documented Rambus saga, se the Federal Trade Commission's ("FTC") decision In the Matter of Rambus, Inc., Docket No. 9302, available at http://www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf.

[2] See for instance "European Panel Investigates DVD-Standards Rivalry", New York Times, 9 August 2006; "Qualcomm rivals take case to EU", Financial Times, 28 October 2005.

[3] See for instance Robert McLeod, "ETSI talks failure puts onus on EC to resolve mobile telephone patent disputes", MLex Comment, 13 November 2006.

[4] See Part III below.

[5] See Part IV below.

amend the rules and procedures of SSOs', have so far been unsuccessful. They remain nevertheless a constant threat.

This paper is divided in seven parts. Part II describes the main features of standard-setting processes, their significance and the strategic battles that may affect them. Part III focuses on the FRAND licensing regime traditionally prevalent in SSOs. Under this regime, owners of IPR that are essential to the standard typically commit to license such patents on "fair, reasonable and non-discriminatory terms". This Part begins by describing the scope of FRAND commitments. It then reviews the various meanings that have been attributed to the concept of FRAND and argues that a "FRAND royalty" cannot be determined in the abstract. Finally, the argument is made that, contrary to what has been suggested by a number of authors, by giving a FRAND commitment an owner of essential IPR cannot be deemed to have waived its fundamental right to seek injunctive relief in case its rights are infringed. Part IV reviews a number of academic studies which argue that the current FRAND regime has proved inadequate to prevent the emergence of a raft of perceived problems: anti-commons, patent thickets, patent hold-up, patent hold-outs, royalty stacking. It is shown that these studies have been seriously challenged and are subject to significant limitations. Moreover, it is argued that they fail to provide any empirical evidence of the problems denounced. Part V examines various proposals that have been made to reshape the FRAND regime. It shows that these proposals, most of which endorse - in one way or another - a compulsory regime of *ex ante* licensing, would create insurmountable practical difficulties and could raise serious competition law concerns. Part VI considers the applicability of Article 82 of the EC Treaty ("Article 82") to claims of excessive-pricing in the IP and standard-setting context. It shows that, should they be pursued, such claims would raise numerous conceptual and practical difficulties. Determining the competitive price of a tangible good is a notoriously complex undertaking, hence the European Commission's understandable reluctance to pursue excessive pricing cases except in a narrow set of circumstances. The potential for error will only be compounded when one deals with intangible assets. For these reasons, determination of appropriate royalty levels for valuable IP should be left to the market. Finally, Part VI contains a short conclusion.

## II. GROWING IMPORTANCE OF STANDARD-SETTING PROCESSES

In this Part, we successively review the objectives and benefits of standardization (Section A), the various forms of standards (Section B), the strategic battles taking place in SSOs (Section C), and the traditional IPR policies adopted by SSOs (Section D).

### A. Objectives and Benefits of Standardization

Industry standards ensure that products from multiple vendors are compatible and interoperable. A standard can be defined as a set of technical specifications which seeks to provide a common design for a product or process.[6] The welfare benefits deriving from the existence of standards are obvious. By allowing complementary or component

[6] See Herbert Hovenkamp, Mark D. Janis & Mark Lemley, *IP and Antitrust: An Analysis of Antitrust Principles Applied to Intellectual Property Law*, (2003-04 Supplement) at 35.1.

products from different manufacturers to be combined or used together, they increase consumer choice and convenience, and reduce costs.[7] For instance, amongst other practical benefits, they allowed the authors of this paper to connect wirelessly to the Internet from different locations in search of relevant materials.[8] These consumer benefits can be especially important in network markets, i.e. where the value of a product or a service to a particular consumer increases with the number of consumers using the same product or service.[9] Examples of such markets abound in the information and communications technology ("ICT") sectors, where protocols allowing devices to communicate seamlessly and networks owned by different providers to interconnect are essential.

In today's technology-driven world, the importance of industry standardization, device interoperability and product-compatibility have become critical to promoting innovation and competition.[10] Standardization has been one of the key factors explaining the significant growth in innovation and product differentiation, which has arisen in the ICT sector. Of course, achieving product compatibility through standardization usually entails making choices, the effects of which will represent a cost. Standardization may at some point and to some extent constrain a variety of technological options by reducing competition between rival technologies.[11] As will be seen below, it may also raise issues related to access where, as is generally the case, the standard embodies proprietary technology covered by intellectual property rights ("IPR").[12]

## B. Various Forms of Standards

Standardization may arise under three distinct sets of circumstances. First, a particular product or technical specification may evolve into a *de facto* standard through market dynamics, as a result of widespread adoption by consumers. This was the case, for instance, of the first commercially successful spreadsheet, Lotus 1-2-3. Second, in certain cases public authorities (governments, agencies or supra-national entities such as

---

[7] See Amy A. Marasco, "Standards-Setting Practices: Competition, Innovation and Consumer Welfare", testimony before the Federal Trade Commission and Department of Justice, available at http://www.ftc.gov/opp/intellect/020418marasco.pdf, p.3 ("Standards do everything from solving issues of product compatibility to addressing consumer safety and health concerns. Standards also allow for the systemic elimination of non-value added product differences (thereby increasing a user's ability to compare competing products), provide for interoperability, improve quality, reduce costs and often simplify product development. They also are a fundamental building block for international trade.")

[8] Shapiro illustrates the benefits of standardization with the following anecdote: "during the great Baltimore fire of 1904, fire fighters called in from neighboring cities were unable to fight the blaze effectively because their hoses would not fit the Baltimore hydrants. The following year, national standards for fire hoses were adopted." Carl Shapiro, "Setting Compatibility Standards: Cooperation or Collusion?", in Rochelle Dreyfuss, Diane Zimmerman & Harry First, Eds., *Expanding the Bounds of Intellectual Property*, Oxford University Press, 2001 at Section I.

[9] See Mark Lemley, "Intellectual Property Rights and Standard-Setting Organizations", 90 (2002) *California Law Review*, 1889.

[10] See Marasco, supra note 7.

[11] On the other hand, standardization promotes competition within a standard, i.e. between products implementing the standard. See David Teece & Edward Sherry, "Standards Setting and Antitrust", (2003) 87 *Minnesota Law Review*, 1913, at 1915.

[12] See Shapiro, supra note 8, at Section III.

the EU) will specify that certain products or processes must comply with a standard and thus compel manufacturers to adopt it. These are usually referred to as *legal* standards. Third, private organisations, often congregating dozens of member companies and individuals, may cooperatively agree on a standard. Such private Standard Setting Organisations ("SSOs") may adopt a variety of structures and decision-making processes, and some will be formal whilst others will rely on informal method of cooperation. Their creation will often be prompted or supported by public bodies.[13] In this paper, we will focus on *SSO*-generated standards, as they are the most significant and raise the most important issues.

Standard-setting taking place in SSOs is typically open to all interested parties and is designed to foster consensus.[14] Participation is voluntary and the policies and decision-making procedures of formal SSOs endeavour to ensure that standards are developed in an open environment. Membership, however, implies accepting the terms and conditions set out in SSOs' bylaws. Where these are perceived as burdensome or unfair, they will deter technology developers from joining. As a rule, each participating member has the opportunity to contribute to the scope of the standard, participate in its development, take part in the "consensus-driven" approval process, and make its positions known. Moreover, even once it is determined within an SSO that a particular process or technology should be standardized, the majority of SSOs allow for appeals by dissenting members.[15] These policies and procedures aim to allow the most appropriate technology to become standardized, based upon technical merit and other relevant factors and to ensure that no single participant can manipulate or abuse the standard-setting process. In that sense, their nature is often quasi-legislative. While firms compete to have their technologies included in a standard, checks and balances are generally built within the SSOs' decision making procedures to ensure that the best technological option succeeds.

### C. Strategic Battles in SSOs

The significance of the outcome of the debate over the most suitable technologies to be incorporated into any given standard have occasionally severely strained the process. This is the result of the inevitable tension between the incentives that every firm has to promote its own proprietary technology as part of the standard and the need for SSO members to work together to develop, establish, endorse, and promote those standards.[16] This tension can be exacerbated by what may be a "winner-take-all" nature of standardization in sectors with significant network externalities such as the ICT sector.

---

[13] For instance, the European Telecommunications Standards Institute (ETSI), headquartered in Sophia Antipolis, France, was formed in 1988 by the European Conference of Postal and Telecommunications Administrations ("CEPT") and is officially recognized by the European Commission as the organization responsible for standardization of information and communication technologies within Europe. Its mission is to "develop globally applicable deliverables meeting the needs of the Information and Communications Technologies ("ICT") community." See generally Lemley, supra note 9.

[14] See Shapiro, supra note 8, at 4.

[15] See, for instance, Telecommunications Industry Association (TIA) Engineering Manual, Art. 13.2 and Annex A, Section A5, available at http://www.tiaonline.org

[16] See Shapiro, supra note 8, at 1.

Another factor contributing to the tensions that may arise in standard-setting processes, but also more generally in the interpretation of the IPR policies of SSOs (see below) relates to the fact that firms involved in standard-setting often wear different "hats" corresponding to the fundamentally different business models they adopt.[17] A distinction may be made between the following categories: (i) pure innovators or upstream-only firms (i.e., firms which develop technologies and earn their revenues solely by licensing them); (ii) pure manufacturers or downstream only firms (i.e., firms which manufacture products based on technologies developed by others but which have no relevant IPR); (iii) vertically-integrated firms (i.e., firms which develop technologies and manufacture products based on those technologies and the technologies of others; these firms may either license their technologies for revenue or choose not to engage in other than defensive licensing activities with their own IPR); and (iv) firms which do not create technologies or manufacture products, but buy products which are manufactured on the basis of patented technologies. These different firms operate in either the downstream product market, the upstream technology market or in both. As a result, their incentives are asymmetric, and their behaviour in the standard-setting context diverges accordingly, as explained below.

While there is a certain degree of fluidity between these categories, the following structure of incentives can be identified:

- Pure innovators are entirely dependent on licensing revenues to continue their operations. These revenues should be sufficient to cover the costs incurred in developing the technologies they seek or hope to license (including the costs of failed projects), as well as to give them sufficient incentives to engage in complex and risky projects.
- Pure manufacturers have converse incentives. As royalties represent a cost (not revenue) they have every incentive to reduce them. The lower the level of royalties payable to holders of IPR essential to the standards they practice, the higher their potential level of profits.
- Vertically-integrated firms that both develop technology and sell products have mixed incentives. One the one hand, they can draw revenue from their IPR if they so choose. On the other hand, they will have to pay royalties to other firms holding IPR essential to the standard for the products they manufacture. Since the bulk of the revenues (and profits) of these firms is generally made downstream, through product sales, they are much less dependent than pure innovators on revenues generated by royalties. In their licensing negotiations with other firms, they may well be more interested in protecting their downstream business from litigation than in charging royalties. They will therefore have a much stronger incentive to cross-license their own essential IPR in exchange for essential IPR held by other firms than in seeking royalties.

[17] See Teece & Sherry, supra note 11, at 1929.

- The immediate incentives of buyers of products implementing standards relying on patented technologies are generally in line with manufacturers. They may consider that the royalties which manufacturers pay to IP holders will increase the price of the products they buy from such manufacturers. This will, however, only hold true if the product market is competitive. As will be seen below, the extent to which royalty savings are passed on to buyers will vary depending on the state of competition in the downstream market. If that market is not competitive, royalty savings are unlikely to be passed on.

## D. Traditional IPR Policies Adopted By SSOs

Most formal SSOs have procedures, usually referred to as IPR policies, the primary goal of which is to address the two fundamental issues arising in standard-setting, i.e. disclosure and licensing of IPR incorporated into a proposed or adopted standard.[18] Although their scope may vary significantly, these procedures seek to encourage IPR owners to make their proprietary inventions available for standardization and use without imposing on them undue obligations. At the same time, SSOs' IPR policies strive to accommodate the interests of implementers to obtain access to the standardized technology, by avoiding situations where IPR owners refuse to license their technology essential to the implementation of a standard to protect, for example, their positions in downstream markets.[19]

Most SSOs encourage IPR owners involved in standardization to disclose upfront, i.e. prior to the adoption of a standard, the IPR that they consider may be "essential" for its implementation.[20] Early disclosure of patents, for instance, "is likely to enhance the efficiency of the process used to finalize and approve standards" and "permits notice of the patent to the standards developer [...] in a timely manner, provides participants the greatest opportunity to evaluate the propriety of standardizing the patented technology, and allows patent holders and prospective licensees ample time to negotiate the terms and conditions of licences [...]."[21]

However, as a rule SSOs do not impose an obligation on IPR owners to conduct a search for, or guarantee the disclosure of, all IPR that may be essential to a given standard. This would prove extremely difficult, as it would require the complex determination of whether a patent or pending patent application reads on a proposed standard. Indeed, this determination may not be feasible as the scope of a standard evolves through its development or, if the relevant IPR is a pending patent application, as claims are modified during prosecution. Moreover, it is generally recognized that a

---

[18] See Lemley, supra note9, at 21 et. seq.

[19] See, e.g. ETSI Guide on IPR, Art. 1 ("The ETSI IPR Policy seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPR").

[20] ETSI defines "Essential IPR" as meaning "that it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, ..... [to] comply with a standard without infringing that IPR." ETSI IPR Policy (version of 23 November 2005) at Art. 15.

[21] See Guidelines for Implementation of the ANSI Patent Policy, at 3, available at http://www.ansi.org/

search obligation would be especially onerous for the owners of large patent portfolios.[22] The fact that the scope of such disclosure and the obligations imposed on IPR owners by the IPR policies of some SSOs have in certain instances been the subject of conflicting and ambiguous interpretations has led some commentators to decry "the inadequacy of typical SSO disclosure policies."[23] As will be shown below, these concerns are generally misplaced.

Once disclosure is made, or contemporaneously with disclosure, IPR owners are typically asked to provide an assurance or commitment that, should their IPR be essential for a standard, they will license them on fair, reasonable and non-discriminatory (FRAND) terms to members of the SSO and outsiders.[24] As will be seen below, the IPR policies of most SSOs do not oblige owners of essential IPR to grant irrevocable licences thereto on FRAND terms. This would amount to compulsory licensing and would deter many owners of valuable technology from joining. But the owner of the IPR has an incentive to make such a commitment voluntarily. In essence, if the owner of essential IPR seeks to have its technology included in a standard, there is an incentive but no obligation to provide the SSO with the contemplated assurance that it will license on (F)RAND terms. Given the fundamental importance of FRAND commitments, Part III of this paper explores in greater details the concept of FRAND in the context of IP licensing.

## III. IP LICENSING UNDER FRAND COMMITMENTS

This Part successively reviews the traditional model of bilateral negotiations between potential licensors and licensees (Section A), the rationale behind FRAND commitments (Section B), and the various meanings that have been given to FRAND (Section C). It finally shows that FRAND works (Section D).

### A. The Traditional Model of Bilateral Negotiations Between Potential Licensors and Licensees

Standards typically include technologies protected by IPR. IPR are legitimate exclusive rights, which confer upon their owners two basic prerogatives: (i) the right to prevent any third party from applying or using the subject-matter of the IPR;[25] and,

---

[22] See Teece & Sherry, supra note 11, at 1947 ("An obligation to search for "implicated" IP can be extremely onerous. It is a major task to search a patent database and to compare it against the proposed standard. Patent searching is especially problematic when the standard evolves over time. Further, it is often difficult to know whether a patent "reads on" a proposed standard, as that may entail a major effort at claims construction and interpretation. A search requirement is especially onerous for IP owners who have substantial numbers of patents. Many firms in high-tech industries have thousands of patents, hundreds of which may be potentially relevant to a proposed standard.").

[23] See Robert Skitol, "Concerted Buying Power: Its Potential for Addressing the Patent Holdup Problem in Standard-Setting", (2005) *Antitrust Law Journal* 727.

[24] See Lemley, supra note 9, p. 26.

[25] See Gerald F. Masoudi, Deputy Assistant Attorney General, Antitrust Division, U.S. Department of Justice, "Intellectual Property and Competition: Four Principles for Encouraging Innovation", Digital Americas 2006 Meeting, Intellectual Property and Innovation in the Digital World, São Paulo, Brazil, 11 April 2006, p. 3 ("In the world of physical property, enforceability means the right to exclude: for example, the ability to evict a person from your land. In the world of intellectual property, the fundamental

correlatively, (ii) the right to set the conditions of a licence in consideration for use of the IPR and as a reward for the innovative contribution made. Except for certain exceptional circumstances,[26] a patent owner may therefore decide not to grant any third party a licence to practice the invention. These exclusive rights are recognized in all patent laws as well as in the TRIPS agreement.[27]

SSOs generally do not force their member IPR owners, in the ICT sector usually patentees, to grant a licence for their patents. The ETSI IPR policy, for instance, does not contain any obligation to license essential IPR. Rather, it provides that a standard or specification may not be approved unless the owner of essential IPR provides an assurance of its intentions For example, Section 6.1 of ETSI's IPR Policy provides that when essential IPR is disclosed, ETSI will request – but not oblige – the owner of the IPR to undertake in writing that it is prepared to grant irrevocable licences on FRAND terms and conditions, and as such to waive its right to refuse to offer a license to those seeking such. A FRAND undertaking also constitutes a waiver by the IPR owner of its right under patent law to grant exclusive licenses. Each of these waivers reflects a willingness by the patentee to forego some of its rights in exchange for the opportunity to have its patented technology included in a standard.

Even if the owner of an essential IPR decides not to make a FRAND commitment, it does not necessarily follow that the relevant IPR will be excluded from the standard. Under Article 8.1 of ETSI's IPR Policy, ETSI's General Assembly will examine whether alternate technical solutions exist. Where it concludes that this is not the case, the Director General may request the owner of the IPR to reconsider. However, the latter is not under an obligation to agree to license.[28]

Consistent with a FRAND assurance is the need for standard implementers to still enter into a licence agreement with the IPR owner. In other words, a FRAND assurance is not, itself, a licence. Rather, in consideration for the IPR owner's willingness to forego

---

right is similar: an enforceable IP right means the right to exclude others from using your intellectual property right at all").

[26] The ECJ, for instance, has held that such exceptional circumstances may occur where the refusal to license cannot be objectively justified and would eliminate all competition, in a downstream market, for a new product for which there is customer demand not offered by the owner of the IPR. See *inter alia* Case 238/87 *Volvo* 1989 4 CMLR 122, para. 8; Joined Cases C-241/91 P and C-242/91 P *RTE and ITP* v *Commission* ('*Magill*') [1995] ECR I-743, para. 50; Case C-418/01 *IMS Health GmbH & Co. OHG v NDC Health GmbH & Co. KG*, paras. 35 and 52

[27] Article 28 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS agreement.), Annex 1C to the Marrakech Agreement Establishing the World Trade Organization, signed in Marrakech, Morocco on 15 April 1994.

[28] This was recently confirmed by a Working Committee of the International Association for the Protection of Industrial Property (AIPPI) which stated the following with regard to the relationship between technical standards and patent rights: "The owner of a relevant patent can, in principle, not be forced to grant licenses to other members of the organization or to outsiders. Only in a few exceptional cases should compulsory licences be admissible according to the conditions of Art. 31 TRIPS or the respective national laws" and "(...) A patent right whether owned by a member of the organization or a third party, which has been identified as relevant for a 'de jure' standard, may be used in the standard only with the consent of the owner." Summary Report on Question Q157 "The Relationship between Technical Standards and Patent Rights", AIPPI Congress Melbourne, 2001, paras. 3.2 and 4, available at http://www.aippi.org.

certain of its exclusive rights, the standard implementer must obtain a grant to use the technology covered by IPR. Licensing negotiations between IPR holders and potential licensees, however, are conducted outside SSOs. For example, ETSI makes clear that such discussions will not take place under its standard development activities, as it takes the view that its role is directed to technical rather than commercial issues.[29] The "reasonable" and "non-discriminatory" character of any licence must be addressed in a commercial context outside the standards-setting environment. Recent proposals made by some members of ETSI to revise its current IPR policy in order to introduce the principles of "aggregated reasonable terms" and "proportionality" into the definition of FRAND did not succeed.[30] No consensus as to the need for or desirability of the proposed reform could be achieved among ETSI members as to these issues.

## B. Rationale behind FRAND Commitments

The rationale behind the FRAND commitment is to ensure dissemination of the essential IPR contained in a standard, thereby allowing it to remain available for adoption by members of the industry, whilst at the same time making certain that holders of those IPR are able to reap adequate rewards from their innovations. The ETSI IPR Policy, for example, provides that IPR holders should be rewarded properly, explicitly recognizing that patent holders "should be adequately and fairly rewarded for the use of their IPR".[31]

The terms and conditions of any licence arising from a FRAND commitment are the result of a normal process of commercial negotiations between the licensor and the licensee. A commercial market-driven negotiation of licence terms is not only what FRAND suggests but is also justified from an economic perspective, as it supports dynamic competition and provides incentives to innovate. Firms engaged in the development of innovative technologies "must not be restricted in the exploitation of intellectual property rights"[32] lest their incentives to innovate be hindered. SSOs recognise that an IPR owner must be free to seek compensation that is sufficient to maintain investment incentives.

---

[29] ETSI's Guide on IPR provides that "specific licensing terms and negotiations are commercial issues between the companies and shall not be addressed within ETSI. Technical Bodies are not the appropriate place to discuss IPR issues. Technical Bodies do not have the competence to deal with commercial issues. Members attending ETSI Technical Bodies are often technical experts who do not have legal or business responsibilities with regard to licensing issues. Discussion on licensing issues among competitors in a standards making process can significantly complicate, delay or derail this process." ETSI Guide on IPR, Section 4.1.

[30] Pursuant to this proposal, called "Minimum Change, Optimal Impact", Aggregated Reasonable Terms would mean that "in the aggregate the terms are objectively commercially reasonable taking into account the generally prevailing business conditions relevant for the standard and applicable product, patents owned by others for the specific technology, and the estimated value of the specific technology in relation to the necessary technologies of the product." In turn, proportionality would mean that "compensation under FRAND must reflect the patent owner's proportion of all essential patents." See "Vendors Seek Compromise on LTE", *Informa Telecoms and Media*, 20 March 2006.

[31] See ETSI IPR Policy, Article 3.2.

[32] See the European Commission's "Guidelines on the application of Article 81 of the EC Treaty to Technology Transfer Agreements" [2004] OJ C 101/2, at para. 8.

Furthermore, given the voluntary nature of participation in SSOs, allowing IPR owners to seek adequate compensation is paramount to ensuring that those who own valuable proprietary technology remain involved in the standard-setting process.[33] Securing the participation of holders of valuable IPR allows SSOs to adopt standards based upon the best technological solutions. The adoption of a standard incorporating second-best technology would have potentially damaging consequences negating the purpose of standardization itself.[34] It would thwart the standard's acceptance by industry and consumers alike and lead to the development of incompatible products based on conflicting technologies.

The ability to license IPR on FRAND terms is, in this respect, a flexible tool which secures the availability of essential IPR without unduly constraining licensors.

## C. Meaning(s) of FRAND

Despite its prevalence in the IPR policies of the majority of SSOs, virtually no SSO policies define the FRAND commitment as specifying or dictating a particular licensing result.[35] There is a regular refrain in the literature that the meaning of (F)RAND is unclear and that SSOs do too little to explain the scope and nature of the concept. Whilst recognizing that the "non-discriminatory" aspect of the FRAND promise is straightforward, certain authors have cast doubts on the intelligibility and therefore

---

[33] "Given the consequences of SSO rules and the nature of voluntary participation, SSOs must tread warily. IP holders must believe that their interests will be protected in the standards-setting process, or they may choose not to participate. Indeed, the proliferation of voluntary special-purpose consortia in many technological areas means that a number of different SSOs, to a greater or lesser extent, "compete" with one another to develop standards. Thus, IP holders that believe that a particular SSO does not adequately protect their interests may be in a position to leave that SSO and participate in another SSO that provides better protection for their IP rights", See Teece & Sherry, supra at note 22 , p.3.

[34] See James C. DeVellis, "Patenting Industry Standards: Balancing the Rights of Patent Holders with the Need for Industry-Wide Standards", (2003) 31 *AIPLA Q.J.* 301, 343 ("A simplistic view of the standardization conflict -- one that views the choice among patent policies as a choice between favoring patent holders and serving the public -- overlooks the fact that all sides will suffer if the standardization process fails to attract the best, most innovative technologies. If a standard-setting organization adopts an inferior standard because someone owns a patent on a superior technology and refuses to make it available on RF [royalty-free] terms, the standard-setting organization runs a real risk that the chosen standard will not be widely adopted. Certainly, the patent owner would not adopt the RF-based standard for itself, and other market participants may be willing to pay a licensing fee to access the superior technology. The inferior standard will thus compete with the patented technology, dividing the market, reducing that market's network effects, and working against the very reasons standard-setting organizations were created.") and 344 ("The patent policy of a standard-setting organization may affect members' motivation for innovation. In the absence of an incentive allowing a patent holder to recover development costs, it is improbable that research and development will occur at the highest level in technological fields. ... Because patents frequently represent extensive research efforts and are expensive and time consuming to obtain, it is likely that if companies perceive that participation in the standard-setting process threatens patent portfolios, there will be a significant reluctance to participate in the process. Under a RAND system, a company has an incentive to compete for the adoption of its (often patented) standard. This competition in the standard-setting process leads to innovation and adoption of the optimal standard among the various options in the market.").

[35] See Lemley, supra note 9, at 38.

effectiveness of the notions of "fair" and "reasonable" terms.[36] Others have gone so far as arguing, albeit without concrete support, that the supposedly vague (F)RAND promise is a "tool for misuse".[37]

As explained above, the fact that FRAND is not further defined cannot be viewed as a shortcoming of SSOs IP policies. Much to the contrary, it is the very absence of a definition mechanically translatable into concrete terms that bestows on the FRAND commitment the suppleness required to achieve one of the fundamental aims of standardization, i.e. to ensure the widest availability of the technology embodied in the standard in the widest possible variety of circumstances. In this respect, FRAND is very much akin to a general clause. It is to be shaped and given meaning by reference to concrete objective and subjective circumstances. The specific meaning of FRAND can only be established in concrete situations, in particular taking into account the positions of the licensor and the licensee. In the following sections we try to flesh out the meaning of the FRAND commitment and examine its different elements.

*1. Willingness to negotiate in good faith/no constructive refusal to license*

A FRAND commitment is intended to prevent an outright refusal to license or the setting of royalty rates and other terms and conditions so high as to suggest an intent by the IPR owner to do indirectly what it has committed not to do directly: refuse to license its essential IPR to other firms (i.e. a constructive refusal to license). It therefore entails a promise by the IPR owner that it is prepared to engage in good faith negotiations with any company wishing to implement the standard with a view to reaching a licensing agreement that will be defined in light of all circumstances present between the two parties at the time of the negotiations.

*2. Fairness and reasonableness*

The question of the meaning of the terms "fair" and "reasonable" contained in the FRAND promise has absorbed the attention of several legal and economic commentators in the last few years. Most of the literature does not distinguish between "fair" and "reasonable", in part due to the fact that the term "fair" is specific to the EU context (US-based SSOs tend to refer to the concept of RAND as one variant, not FRAND). Various meanings have been given to these terms.

Several economists suggest that a reasonable royalty is the royalty that the essential patent holder could have obtained *before* a standard was adopted, i.e. on an *ex ante* basis. For example, Shapiro and Varian state that "[r]easonable should mean the royalties that the patent holder could obtain in open, upfront competition with other

---

[36] See Daniel Swanson & William Baumol, "Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power," 73 Antitrust L.J. 1, at 3 ("[a] RAND commitment is of limited value in the absence of objective benchmarks that make clear the concrete terms or range of terms that are deemed to be reasonable and nondiscriminatory"); Lemley, supra note 9, at 127 ("It is all well and good to propose that SSOs require licensing on reasonable and nondiscriminatory terms. But without some idea of what those terms are, reasonable and nondiscriminatory licensing loses much of its meaning").

[37] See Skitol, supra note 23, at 2.

technologies, not the royalties that the patent holder can extract once other participants are effectively locked in to use technology covered by the patent."[38] Similarly, Swanson and Baumol argue that "[i]f the primary goal of obtaining RAND licensing commitments is to prevent IP holders from setting royalties that exercise market power created by standardization, then the concept of a 'reasonable' royalty for purposes of RAND licensing must be defined and implemented by reference to ex ante competition, i.e., competition in advance of standard selection."[39] This position, however, is based on the unsupported premise that standardization necessarily establishes market power beyond the "power" conferred by the patent itself. As will be seen below, this is not certain.

In our view, the question of what "reasonable terms" may consist of goes back to the second prerogative of the patent owner, i.e. its right to be rewarded for the innovative contribution made and to ask the price that the market is willing to pay for its IPR (i.e. how valuable the IPR is to others). As noted above, standardization does not deprive a patent owner of this prerogative. The only material consequences of making a FRAND commitment is that the IPR owner waives its rights to refuse to engage in good faith negotiations to license and to grant an exclusive licence. The specific terms of any such licence, however, are left to be determined by the parties to the negotiation.

Thus, FRAND does not impose any specific and concrete obligations on the licensor with regard to the actual level of royalties or any other terms and conditions provided for in licensing agreements, outside of the context of a constructive refusal to license. Rahnasto, for instance, explains that "the [FRAND] rule leaves the determination of exact terms for the parties to decide. This case-by-case determination allows parties to a particular licensing transaction to find their own interpretation of 'fair and reasonable'."[40] He further adds: "In connection with standardization, the term 'fair and reasonable' is usually understood as a reference to the economic reality. Generally, a licence is fair and reasonable if the terms would be acceptable in arm's-length-negotiations."[41]

"Fair and reasonable" licensing terms would therefore consist of those terms determined through fair, bilateral negotiations between individual IPR owner and standard-adopter in accordance with the market conditions prevailing at the time of such negotiations.

*3. Non-discrimination*

Most authors consider that the "non-discriminatory" element of the (F)RAND promise is straightforward, requiring that IPR owners license similarly situated adopters

---

[38] See Carl Shapiro & Hal Varian, *Information Rules: A Strategic Guide to the Network Economy,* Boston: Harvard Business School Press, 1999, at 241.
[39] See Swanson & Baumol, supra note 36, p.5.
[40] See Illka Rahnasto, *Intellectual Property, External Effects and Anti-trust Law*, Oxford University Press, 2003, para.4.105.
[41] Id. at para. 6.34.

on the same terms.[42] Discriminating between similarly situated competitors active in the markets for the product incorporating the standardised IPR would hinder the competitive process, as would allowing licensees to mix and match various provisions of individual licence agreements that reflect trade-offs between the original parties.

Another interpretation has been suggested by Swanson and Baumol, who argue that an SSO participant that competes downstream with other adopters in the market for the standardized product must treat its adopter-licensees no less favourably than it treats itself. In other words, it should charge licensees what it "implicitly charges itself for use of the [intellectual] property."[43] Swanson and Baumol also suggest a principle for determining license fees based on the "efficient component pricing rule" (ECPR), which they claim is "both necessary and sufficient for a license fee to be competitively neutral in downstream markets and, therefore, at least on that basis, a necessary condition for that fee to be non-discriminatory. That is to say, any license fee that substantially departs from the ECPR level can be deemed to violate the RAND requirement of non-discrimination."[44]

*4. What is a FRAND royalty? Can it be determined in abstract?*

The semantic concern with the meaning of the FRAND promise is usually linked to the more practical question of how to determine whether a specific royalty level complies with a FRAND commitment. In our view, the answer to this question turns on the merits of the long-established model of bilateral negotiations between IPR owner and standard-adopter.

As seen above, a licence can be deemed fair and reasonable if its terms would be acceptable in arm's-length-negotiations. These terms can therefore not be determined in a vacuum, without subjective reference to specific IPR owner and standard adopter. Moreover, royalties are but one element of the consideration agreed upon between the parties. It is therefore unfortunate that the misleading term "FRAND royalty" has become shorthand for the more accurate "Royalty rate established under an agreement negotiated in accordance with a FRAND commitment" Other elements susceptible of pecuniary valuation, such as a cross-licence to the licensees' IPR or an upfront fee, are

---

[42] Interestingly, Teece & Sherry have argued that the problem of non-discrimination should in theory be of greater importance to firms than the issue of fairness: "[F]irms would prefer not have to pay royalties, just as they would prefer not to have to pay their rent or their income taxes. But so long as every firm must pay, then the cost of the royalties can be built into the price of the product being sold, just as the cost of the raw materials and labor needed to make and sell the product is likewise built into the price. That is, prospective licensees may rationally be far more concerned about the 'non-discriminatory' aspect of the RAND requirement than they are about the 'reasonable' aspect. This, in turn, implies that from an economic and organizational behavior perspective, it is quite rational for SSOs to pay much more attention to the requirement that licenses be available on (unspecified) RAND terms than they pay to the question of what the 'reasonable' royalty rates should be.") See Teece & Sherry, supra note 11 , at note 149.

[43] See Swanson & Baumol, supra note 36, p. 11.

[44] Id.

taken into account and their value is often significantly higher than that the royalty itself.[45]

This does not mean that participants in the standard-setting process as well as outsiders will be unable to estimate the royalty level that a given IPR owner can be expected to charge for its essential IPR. In fact, patent owners have the incentive to engage in such ex ante licensing conduct because it affords a greater likelihood that their patented technology will be included in the standard.[46] As explained by the American National Standards Institute (ANSI), "[a] patent holder may have a strong incentive to provide an early assurance that the terms and conditions of the license will be reasonable and demonstrably free of unfair discrimination because of its inherent interest in avoiding any objection to the standardization of its proprietary technology."[47] In addition, patent holders demanding unreasonable and/or discriminatory terms and conditions may be expected to have great difficulty in convincing SSOs in the future to adopt standards incorporating their essential IP in the continually evolving technology marketplace.

In our view, the term "FRAND royalty" has no meaning. Where it is used as an abbreviated synonym for the royalty rate established under an agreement negotiated in accordance with a FRAND commitment, it obscures the fact the royalty rate itself conveys little information as to the fairness and reasonableness of the overall licensing terms.

*5. FRAND and injunctive relief*

A number of authors have argued that by making a FRAND commitment an essential patent holder waives its right to seek injunctive relief in case of infringement

---

[45] For example, Grindley & Teece have found that in the fields of semiconductors and electronics cross-licensing is more complex than the exchange of individual property rights. Patent holders in these industries generally license a portfolio of patents within a field of use due to the transaction costs associated with negotiating and monitoring infringement of individual patents and the needed freedom to design and manufacture without infringement. Negotiating a patent portfolio license often involves negotiating a balancing of royalty payments according to the "value of the patent portfolios of each party" and the value of each party's exposed product sales. Peter C. Grindley & David J. Teece, "Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics", 39 (1997) *California Management Review*, 9.

[46] As explained by Richard Holleman, a former IBM executive with extensive standards experience in the U.S. and internationally: "I believe there is a misperception of how potential license terms are discussed. First, more often than not, patent owners provide statements that if they have patents that are essential to implementation of the standard being developed they will license such patents on reasonable nondiscriminatory terms. Then, outside the activities of the SDO, individual standards participants are able to approach the patent holder to inquire of available licensing terms. The patent holder is also free to publicly state what its license terms will be. To the extent the patent holder does not make such a statement, or declines to engage in discussions with individual standards participants, it is always the discretion of the standards participant to not support the patent holder's technology or to propose an alternative technology to the standards developing committee. Ultimately, a consensus will establish what technology to support." Submission of Richard J. Holleman, *Comments on Standards Setting and Intellectual Property*, to the Joint Hearings of the United States Department of Justice and the Federal Trade Commission Regarding Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, 10 April 2002, 2.

[47] See ANSI Guidelines for Implementation of the ANSI Patent Policy at 3-4.

(the "waiver theory"). Dolmans, for instance, claims in a paper published in 2002 that "[o]wners of essential IPR for *de facto* or *de jure* standards (and especially those who have committed to FRAND licensing in order to obtain an exemption under Article 81(3) EC) should limit themselves to suits for damages and refrain from requesting injunctive relief against implementers."[48]

More recently, Miller argues that "the RAND promise's core function is to achieve a business organization goal that all SSOs confront - namely, removing the threat of post-adoption hold-up, thus inducing group production of a viable standards-based technology platform."[49] According to Miller: "[e]very participating patent owner has, by making the RAND licensing promise, irrevocably waived its right to seek that most traditional of intellectual property law remedies, a court injunction against unauthorized access. The only relief a frustrated patent owner can seek against an adopter thereafter is the reasonable royalty expressly contemplated". Although Miller is not always clear as to why he thinks that a FRAND commitment should mean that the essential IP holder who has so committed loses its right to seek injunctive relief, he seems to suggest that this is due to the fact that the threat of injunctive relief could negatively affect licensees' incentives to make the necessary investments to implement the standards. Miller's position is, however, based on the premise that U.S. courts would automatically grant permanent injunctions against the standard implementer's use of essential IPR. Following the ruling of the U.S. Supreme Court in *eBay*, this no longer seems to be the case.[50]

Shapiro and Lemley have also argued that firms that hold patents that are essential to implement a standard should not be entitled to seek injunctive relief. However, their argument is based on economic and public policy grounds rather than on an analysis of current SSOs' IPR policies and an interpretation of existing FRAND commitments. For instance, in a paper released in May 2006 relying on bargaining theory, they argue that "the threat to obtain a permanent injunction greatly enhances the patent holder's negotiating power, leading to royalty rates that exceed a natural benchmark level based on the value of the patented technology and the strength of the patent."[51]

While the above authors argue that holders of IPR embedded in a standard have or should have no right to seek injunctive relief and instead could only seek damages for infringement of those IPR, their position is grounded neither on statute nor case-law, as there is no such precedent for them to invoke. Instead, it merely reflects policy preferences that may or may not be deemed in future to have merit, but for which no historical consideration was given when most (F)RAND policies were adopted.[52]

---

[48] See Maurits Dolmans, "Standards for Standards", (2002) 26 *Fordham Int'l L J* 163.

[49] See Joseph Miller, "Standard Setting, Patents, and Access Lock-in: RAND Licensing and the Theory of the Firm", forthcoming 40 *Indiana Law Review* 2006.

[50] See *eBay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837, 1838-39 (2006).

[51] See Mark Lemley and Carl Shapiro, "Patent Hold Up and Royalty Stacking", July 2006, *Stanford Law and Economics Olin Working Paper No. 324*, available at SSRN: http://ssrn.com/abstract=923468

[52] Lemley explicitly admits that he is "aware of no cases treating this issue", stating that it is his "policy preference" that an IPR owner's commitment to an SSO be construed as itself implying the grant of a licence, with the result that the IP owner is precluded form seeking an injunction for patent infringement. See Lemley, supra note 9.

While the right of IP holders to seek injunctive relief is expressly guaranteed under US federal law,[53] it is also recognized under international trade law and EU law. Article 41(1) of the TRIPS Agreement provides that Members shall ensure that enforcement procedures as specified in TRIPS are available under their law so as to permit effective action against any act of infringement of IPR.[54] They also include the right to seek and obtain an injunction, i.e. a court decision whereby a party is ordered to desist from an infringement of an IPR. These injunctions can be imposed by way of preliminary measure (interlocutory injunction) (Article 50(1)) or as a measure resulting from a decision on the merits of the case (permanent injunction) (Article 44(1)). The first type of injunction is intended to provide an expeditious remedy to prevent an infringement and constitute a deterrent to further infringements. The second type of injunction is meant as a final remedy. The IP Enforcement Directive also states that EU Member States must ensure that in cases where there is a finding of an infringement of an IPR (Article 11) courts can issue both an interlocutory injunction intended to prevent an imminent infringement or to enjoin the continuation of the alleged infringements (Article 9), as well as a permanent injunction.[55]

The making of a FRAND commitment by an essential patent holder cannot be interpreted as an implicit waiver to its right to seek injunctive relief as recognized in the law. Such an interpretation would be in sharp contradiction to an established principle of law according to which a waiver of right can never be assumed lightly and must always be made explicitly or at least should be derived from circumstances that cannot possibly be interpreted any differently than the right owner's consent to waive his right. This very basic principle is recognized in all European continental[56] and common law legal systems.[57]

There is no provision whatsoever contained in ETSI's IPR Policy – nor in any other SSO IPR policy – that requires the patentee to undertake in writing that it will never apply for an injunction against infringers, for instance should the said standard adopter fail to subscribe to a FRAND licence. Consequently, there is no waiver by the patent holder to seek an injunction when good faith negotiations to agree on a FRAND licence have failed. ETSI and other SSOs only require patent holders to engage in good faith negotiations with a view to conclude a licence on FRAND terms.

Finally, in our view the policy considerations that underlie the "waiver theory" are misconceived, although this paper is not the proper place to expand on the topic. If an IPR owner were only able to obtain a judicial ruling establishing that its IPR has been

---

[53] See US Patent Act, Part III., Chap.29, Section 283.

[54] See Article 42 of the TRIPS agreement, supra note 27.

[55] See Directive 2004/48 of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights, O.J. L 157 of 30 April 2004.

[56] See, e.g., Belgian Supreme Court, 19 September 1997, *Arr. Cass.* 1997, 840 and French Supreme Court, 10 May 2000, Case No. 97-13907.

[57] See, e.g., Schoon v. Troy Corp., C.A. No. 1677-N, 2006 Del. Ch. LEXIS 123, *7 (Del. Ch. June 27, 2006) stating that "[t]here can be no waiver of a statutory right unless that waiver is clearly and affirmatively expressed in the relevant document," and that no waiver existed where the contract at issue "did not in any way, explicitly or implicitly, contractually limit the information that must be provided [...] in the exercise of [...] statutorily protected rights under [8 Del. C. § 220]".

infringed and if its only relief were an *ex post* award of damages, standards' adopters would be invited to take their chances in court and begin immediately using the invention without trying to obtain a licence. For those adopters, the worst case scenario would merely be a requirement to pay damages once a court had established the infringement. It would therefore be akin to compulsory licensing. Such an interpretation of the FRAND commitment would be a patent infringers' charter and provide an incentive for implementers of a standard to refuse beforehand to enter into licence agreements on FRAND terms. In those circumstances, patentees would arguably prefer to settle for a licence on terms that would not provide a fair return on their investment, in other words not FRAND, rather than face lengthy, onerous and uncertain court proceedings for the award of damages. This would amount to nothing less than an *"inverse patent hold-up"*, this time committed by the standard adopter, who would be in a position to refuse the FRAND licence terms proposed by the patentee but still remain immune from injunctions for infringement. Patentees could even draw the conclusion that they should refrain from participating in future standard-setting processes. In both instances, consumer welfare and innovation would be significantly hampered.

### D. The Enforceability of FRAND

Where difficulties in reaching a mutually satisfactory licence agreement do arise, a standard implementer may seek judicial relief and request that a court evaluate the reasonableness of the IPR owner's offer. The enforceability of the FRAND obligation results from the fact that it forms part of a private agreement between an IPR owner and a SSO. The IPR owner's refusal to enter into licensing negotiations may represent a breach of contract. The obligation may be provided in a SSO's bylaws, internal rules or IPR policies to which all members must adhere, and therefore stem directly from the IPR owner's membership of the particular SSO. It may also be provided in a written agreement whereby the SSO member undertakes to licence its essential IPR in respect of a specific standard.

A FRAND commitment may also be viewed as imposing a duty on the owner of an essential IPR to engage in the licensing negotiations in good faith. Thus, an effort to impose terms that constructively preclude a standards adopter from gaining access to the technology incorporated in the standard might be deemed not differ from an outright refusal to negotiate a licence. The laws of most jurisdictions recognize an obligation to negotiate in good faith, and if a prospective licensee can marshal evidence to prove the lack of good faith, it should have recourse to the courts of the competent jurisdiction. The burden of proof should, however, be placed on the prospective licensee. Otherwise, claims of unreasonable licensing terms would simply reflect a desire by the prospective licensee to avoid having to take a licence on terms it simply does not like.

In the context of assessing an IPR owner's good faith in negotiating a licence, as well as the equivalent obligation of the prospective licensee to act in good faith, a court might also assess what a FRAND licence might be by weighing all factors applicable to the specific situation. In some respects, this analysis might borrow from patent law principles for determining a "reasonable royalty" for damages purposes. Courts are called upon regularly to determine damages based on a reasonable royalty analysis

arising from patent infringement actions. In such cases, (patent) courts evaluate all factors that are relevant to the particular circumstances. For instance, American courts today give great weight to 15 factors that were employed to determine a reasonable royalty in the seminal *Georgia-Pacific* case.[58] These factors included *inter alia* considering licence fees for similar patents as benchmarks, measures of the nature and scope of the patent, consideration of the next best alternative to the patent and any cost savings from using it as opposed to older modes or devices, the opinion testimony of qualified experts, consideration of the particular benefits to the licensee and the commercial relationship between IPR owner and prospective licensees.[59] The sine qua non, however, is prior licence agreements for the very patent(s) for which damages are being determined and what those licensees have agreed to. It must be understood, however, that such an analysis would not provide a static definition of FRAND; it would address specific circumstances and allow for a balanced consideration of all relevant and applicable factors.

### E. FRAND works

Contrary to the pronouncements of the theoretical literature that will be discussed below in Part IV below, the SSOs' preference for a flexible system of fair, reasonable and non-discriminatory licensing of IPR essential to a standard appears to be justified. Clearly, it has allowed thousands of standard implementers and owners of IPR essential to the standard to reach mutually satisfactory agreements and SSOs to conduct valuable standardization activities in a number of vastly different fields.

That is not to say that the FRAND model will not give rise to occasional difficulties. Friction and even outright hostility can be expected to arise where companies must remunerate IPR owners for those rights. There is a sort of love and hate relationship between innovators (licensors) and implementers (licensees). While implementers are keen to acquire technologies from innovators, they hate the idea of paying royalties to them until the relevant patents expire. This explains why some SSO members whose revenues are not primarily derived from royalties but rather on manufacturing or services seek to modify SSOs' IPR policies in order to alter the respective bargaining power of licensors and licensees in a way that is favourable to the latter. Although attempts to redefine FRAND have failed at ETSI, this is nevertheless a serious threat. As pointed out by Teece and Sheery, "[o]ne major public policy issue thus involves balancing the interests of intellectual property owners and the users of that intellectual property. Almost by definition, the latter are likely to outnumber the former; a patent has only one owner, but multiple manufacturers may need to use the patented technology. Hence, SSOs tend to be dominated by the demand side of the technology

[58] Georgia-Pacific Corp. v. U.S. Plywood-Champion Papers Inc., 446 F.2d 295 (2nd Cir. 1971).

[59] For a more recent application of the multifactor *Georgia-Pacific* test, see *Interactive Pictures Corp. V. Infinite Pictures, Inc.*, 274 F.3d 1371 (Fed. Cir. 2001); also Roy J. Epstein & Alan J. Marcus, "Economic Analysis of the Reasonable Royalty: Simplification and Extension of the Georgia-Pacific Factors", (2003) 85 *Journal of the Patent and Trademark Office Society*, 7.

market, and they are likely to adopt procedural and substantive rules that favour IP users over IP owners."[60]

Despite these tensions, recent submissions made by SSOs seem to confirm that, with very few exceptions, current IPR policies have largely been successful.[61]

## IV. PERCEIVED PROBLEMS WITH THE TRADITIONAL FRAND REGIME

While SSOs have significantly contributed to the development of, and the growing competition within, high-tech sectors, there are concerns that their activities could produce anti-competitive effects. We have seen that under traditional standard development procedures members of SSOs are asked to disclose the IPR that they consider may be essential for implementation of a standard.[62] At the same time, they typically provide an assurance or commitment that, if their IPR are included in a standard and are therefore in fact essential, they are prepared to license their IPR on FRAND terms, with or without monetary compensation.

Some commentators believe that these licensing commitments are insufficient.[63] It has been said that the current FRAND regime or more generally the procedures and IPR policies of the SSOs would prove inadequate to prevent the emergence of a raft of perceived problems, holding a variety of labels, such as anti-commons, patent thickets, patent hold-up and hold-outs, royalty stacking. These problems would have as a common theme that as more and more firms take out patents on their inventions and standards in high-tech sectors embed patented technologies, the royalty costs of implementing standards will reach levels that make such implementation impossible. The cumulative royalties charged by essential patent holders would indeed be such that implementing standards would no longer be attractive and thus useful innovations would no longer make it to the marketplace. In the developments that follow, we review the various theories underlying these gloomy predictions.

---

[60] See Teece & Sherry, supra note 11, at 1935.

[61] For instance, in observations submitted in the context of the FTC/DOJ public hearings on "Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy", the Standards Association of the Institute of Electrical and Electronics Engineers (IEEE-SA) stated: "Participation in standards developing committees is voluntary and disclosure of patents is based on the willingness of the individual participants to disclose any known patents whose use would be required in the practice of the standard and for such patents to be licensed on reasonable terms that are not unfairly discriminatory. With very few exceptions, this approach has worked very successfully for at least the past twenty years in the development of IEEE Standards by protecting the rights of the patent holder while meeting the need for standards that incorporate the best technology and which can be promulgated throughout industry on a worldwide basis.". Cited by Teece & Sherry, supra note 11, at 28.

[62] ETSI defines "Essential IPR" as meaning "that it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, [to] comply with a standard without infringing that IPR." ETSI IPR Policy (version 23 November 2005) at Art. 15.

[63] See, e.g., Gil Ohana, Marc Hansen & Omar Shah, "Disclosure and Negotiation of Licensing Terms Prior to Adoption of Industry Standards: Preventing Another Patent Ambush", (2003) 24 *European Competition Law Review,* 644; Robert A. Skitol, "Concerted Buying Power: Its Potential for Addressing the Patent Holdup Problem in Standard Setting, (2005) 72 *Antitrust Law Journal*,727.

## A. Anti-commons

The roots of such propositions as royalty stacking and patent thickets can be traced back to Heller and Eisenberg who, in a seminal article published in 1998, suggest that the combination of pioneer and follow-on inventors could lead to "too many" patents in biomedical research, ending in a "tragedy of the anti-commons".[64] The tragedy of the commons is a well known problem in joint ownership, when multiple owners share some property (like a village commons on which sheep graze) and no one has the right to exclude any one else. The tragedy occurs from overuse - the villagers let their sheep graze too much, so that the field is completely destroyed.[65] The tragedy of the anti-commons is the mirror image of the tragedy of the commons. When multiple owners share the rights to property but every one of them has the right to exclude all others, the tragedy occurs from under-use. Heller and Eisenberg argue that an anti-commons tragedy could develop in biomedical research via one of two paths. First, the privatization of biomedical research through patenting might create "too many concurrent fragments of intellectual property rights in potential future products". Alternatively, patent policy might permit "too many upstream patent owners to stack licenses on top of the future discoveries of downstream users."[66]

The anti-commons claims have not gone unchallenged. Wagner argues that the hypotheses based on notions of a commons or public domain for research have overlooked important mitigating factors.[67] Two key points that the anti-commons theory ignores, according to Wagner, are (i) the difference between physical property and intellectual property and (ii) the difference between the short-term and the long-term. While the village green can be reduced to dust from too many grazing sheep, "in the information commons, no such zero-sum game exists." For example, a patent on a particular form of hybrid corn may prevent other agribusinesses from exactly copying the corn, but they can learn the value of hybrid corn to the market by observing the patented product's success and this can spur them to try other hybridization processes. Patenting should thus stimulate innovation.

Epstein and Kuhlik argue that Heller and Eisenberg "supplied little, if any empirical evidence for their assertion that the patent blockade dominates patent innovation."[68] Much in the same vein, Kitch argues that Heller and Eisenberg's arguments are "based on theory not experience" and he concludes that the "tragedy of the anti-commons in this area of biomedical research is something that could have occurred as a matter of theory. It is not as yet, however, a problem that has been shown to have

---

[64] See Michael Heller & Rebecca Eisenberg, "Can Patents Deter Innovation? The Anticommons in Biomedical Research," (1998) 280 *Science*, 698-701. This article was based on a more formal analysis by Michael Heller in "The Tragedy of the Anticommons: Property in the Transition from Marx to Markets," (1998) 3 *Harvard Law Review*, 621.

[65] See Garret Hardin, "The Tragedy of the Commons" (1968) 162 *Science*, 1243-1248.

[66] See Heller & Eisenberg, supra note 64, at 699.

[67] See R. Polk Wagner, "Information Wants to be Free: Intellectual Property and the Mythologies of Control," (2003) 1 *Columbia Law Review*, 995.

[68] See Richard A. Epstein & Bruce N. Kuhlik, "Is There a Biomedical Anticommons?" *Regulation*, Summer 2004, p.55. See also Richard Epstein, "Studying the Course: Property Rights in Genetic Material", *The Chicago Working Paper Series*, March 2003.

actually occurred. At least so far, the patent system appears to have been an experiment that has worked."[69] As will be seen throughout this Part, lack of evidence that the combined growth of patenting and IP fragmentation has brought innovation to a halt or at least reduced the level of innovation that would have been reached in the absence of this phenomenon.

Epstein and Kuhlik also point to patent holders' self interest as another deterrent to the tragedy of the anti-commons.[70] Patent holders, at least non-vertically integrated ones, profit from licensing their patents, thus the authors argue that "[r]efusing to deal is a loss of opportunity. In addition, the patent is always a wasting asset; not only is it limited in time, but even during the period of its unquestioned validity its holder faces the possibility that new patents, old patents that have expired, and new techniques that come into the public domain will erode its dominance. Those who do not deal will not prosper..."[71]

## B. Patent Thickets

In 2001, Shapiro picked up one of the threads from the anti-commons debate, pronouncing the existence of a "patent thicket" in "several key industries".[72] The key extension here is the application of the anti-commons theory to high technology industries involved in standard setting. Shapiro argues that "[t]he need to navigate the patent thicket and hold-up is especially pronounced in industries such as telecommunications and computing in which formal standard-setting is a core part of bringing new technologies to market."[73] To bolster this claim, Shapiro cites the dramatic increase in patenting and the potential implications in terms of IP licensing costs in these two sectors. According to Shapiro, "the danger of paying royalties to multiple patent owners is hardly a theoretical curiosity in industries such as semiconductors, in which many thousands of patents are issued each year and manufacturers can potentially infringe on hundreds of patents with a single product."[74] Nonetheless, Shapiro does not present any evidence on licensing difficulties or "hold-up" within the semiconductor or telecommunications industries, instead referring to unsupported hypothetical results.

One of the key distinctions for patent thicket theory as applied to standard setting lies in the timing of licensing negotiations. For those technologies that are easy to invent around, Shapiro argues, "the patented technology contributes little if anything to the final product, and any 'reasonable' royalty would be modest at best."[75] But after the technology is included in a standard or after potential licensees have started manufacturing, the patent holder "can credibly seek far greater royalties, very likely

---

[69] See Edmund Kitch, "Comment on the tragedy of the Anti-Commons on Biomedical Research", in S; Kieff, Ed., *Perspectives on Properties of the Human Genome Project*, Elsevier, 2003, at 271, 272.
[70] See Epstein & Kuhlik, supra note 68 , at 55.
[71] Id.
[72] See Carl Shapiro, "Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting," in *Innovation Policy and the Economy*, Volume I, Adam Jaffe, Joshua Lerner & Scott Stern, Eds, MIT Press, 2001.
[73] See Shapiro, supra note 72, abstract.
[74] Id., p. 7.
[75] Id.

backed up with the threat of shutting down the manufacturer..." Shapiro sees little relief for this ex post "hold-up" aspect of patent thickets short of reforming patent law.

One clear limitation of Shapiro's argument, however, is that standardization only grants additional market power and thus enhances the essential patent holder's ability to charge royalties when the patented technology can be easily designed around. In the presence of a technology for which there is no alternative as is often the case in complex industries, the ability of the patent essential holder to seek significant royalty rates exists prior to the adoption of the standard.[76] Standardization will certainly benefit essential patent holders as standardization stimulates the implementation of selected technologies and thus expands royalty revenues, but in the case of technologies for which there is no reasonable alternatives the ability for licensors to extracts rents originates in the uniqueness of their inventions.

### C. Patent Holdout and Hold-up

A related, but distinct, strand of the literature focuses on non-cooperation. Under patent holdout and hold-up, a firm with relevant IP emerges after a standard is set and demands high royalty payments. Thus, the focus here is not on too many rights spread across a great many rights holders, but rather on the questionable behaviour of one rights holder. In some instances, the firm participates in the standard setting process, at least to some extent, but either does not declare its relevant patents to the standardization body or declares them but then prices those patents unreasonably during ex post negotiations.[77] The strategy of participating in a standard but not disclosing IPR has become quite risky in recent years, since a number of firms engaged in such tactics have been prosecuted. But, of course, some holdouts never directly join in standard setting efforts. They instead watch the process from the sidelines and reveal their patents after a standard has been set.

Nonetheless, Shapiro argues that hold-up is a regular occurrence: "[t]he principal finding in this paper is that the current U.S. patent system systematically over-rewards the owners of weak patents [defined as those covering only minor inventions], especially in the information technology sector where a single product can incorporate many patented features."[78] He develops a model in which patent holders use the threat of injunction to push firms into paying more for a license than the underlying technology

---

[76] But the incorporation of a patented technology into a standard does not always create market power. A patented technology may be so fundamental to the subject matter of a standard as to have no viable alternatives. A technology also may be so superior to its alternatives that a standards body may have no practical choice but to incorporate it into a standard. In either case, any market power that may be enjoyed by the patent owner would arise from the market's demand for the invention and not from its incorporation into the standard. Moreover, the incorporation of the patented technology into a standard may not confer market power at all if alternative standards exist or if the standard otherwise fails to secure market acceptance." See Joseph Kattan, "Disclosures and Commitments to Standard-Setting" (2002) *Antitrust* 22.

[77] See, for example, the discussion of Wang's refusal to license its Single In-Line Memory Modules (SIMMs), after lobbying JEDEC to adopt the technology as a standard, in Janice M. Mueller, "Patent System Reform: Patent Misuse Through the Capture of Industry Standards," (2002) *Berkeley Technology Law Journal*, 659.

[78] See Carl Shapiro, "Injunctions, Hold-Up, and Patent Royalties," Working Paper, Draft 17 April 2006, http://faculty.berkeley.edu/shapiro/royalties.

deserves. The intuition is that a manufacturer facing plant shutdown or a costly product redesign will be willing to pay considerably more than a patent is "worth" to avoid those costs.[79]

Lichtman, however, offers a different view of the hold-up problem. He argues that at some point, a fragmentation of IP rights - so denigrated in the anti-commons theory - can actually be a good thing: "The large number of overlapping patents that makes it difficult for firms to license necessary rights at the same time dampens the costs associated with each specific failure to license [...] some resources will come into efficient use precisely because there are so many patent holders who each can plausibly veto another firm's use."[80] In other words, when a relatively large number of firms follow a patent holdout strategy, actual hold-up is far less attractive: "More patents means less money per patent holder. Less money, in turn, means less of an incentive for a firm to strategically delay in the hopes of being a patent holdout, and less of an incentive for an accidental patent holdout to actually bring suit."[81]

### D. Royalty Stacking

In essence, this theory is a less extreme version of the anti-commons problem. Rather than grinding all innovation to a halt, the many IPR distributed across numerous rights holders lead to an extremely costly and inefficient outcome.

Royalty stacking can be explained simply. A firm wishing to produce a good, especially one embodying a technical standard, typically needs to acquire rights to the intellectual property underlying the good. When that good is comprised of multiple complementary components, each of which is necessary for production and each of which is covered by patents held by separate firms, the aggregate royalty fees for licensing all of the required pieces can, it is sometimes suggested, add up to a very large amount - perhaps so large that it is no longer economical for the manufacturing firm to make the good. This can allegedly happen even if each component's patent is offered on "reasonable" terms. Stacking up so many reasonable terms would indeed lead to an unreasonable sum.

Four factors are implicit in the royalty stacking proposition. First, innovation must be sequential and cumulative, so that the patents are overlapping and interrelated. Otherwise, the royalties could not stack up. Second, there must be many patents for a given product, such as one embodying a technical standard. Otherwise, the stack would be small and either inconsequential or relatively easy to negotiate out of. Third, the many patents must be held by numerous, distinct rights holders. Otherwise, negotiating the use

---

[79] Mark Lemley echoes many of the same arguments, without any models: "Our goal should be to create a world in which patent owners can get paid for the technology they contribute, but in which what they get paid bears some reasonable resemblance to what they actually contributed." See Mark Lemley, "Ten Things to Do About Patent Holdup of Standards (and One *Not* to)," working paper 2006.

[80] See Douglas G. Lichtman, "Patent Holdouts and the Standard-Setting Process", *University Chicago Law and Economics, Olin Working Paper No. 292*, May 2006. Available at SSRN: http://ssrn.com/abstract=902646 at 13.

[81] Id. at 10.

of the many patents would be fairly straightforward, involving a limited number of bilateral negotiations. Fourth, the given licensee or all licensees must have no patents to trade with licensors. Otherwise, cross-licensing would drastically reduce the risk of royalty stacking.[82]

Lemley and Shapiro extend the discussion of patent hold-up and injunctions to royalty stacking. They note that "[a]s a matter of simple arithmetic, royalty stacking magnifies the problems associated with injunctive threats and hold-up, and greatly so if many patents read on the same product."[83] Lemley and Shapiro argue that a manufacturer's margin is a limiting factor in royalty negotiations, but that amount typically leaves considerable room for patent holders to overcharge compared to the value of the technological contribution.

In order to give credibility to their claims, Lemley and Shapiro (2006) present two case studies as empirical evidence of a royalty stacking problem.

They begin with third-generation (3G) cellular technology, which involves several standards and allegedly several thousand patents disclosed as "essential" for each one. Those patents are held by a fairly large number of firms - for WCDMA, one of such standards, forty-one firms in all are represented, although roughly 75% of the patents are held by just four firms. At least on the surface, then, WCDMA would be a candidate for royalty stacking. Lemley and Shapiro argue that a royalty stacking problem actually exists on the basis of one questionnaire conducted before the standard was adopted. Firms that had declared patents as relevant for WCDMA were asked, hypothetically, what they would like to charge for their patents if they were found to be essential to the standard. Summing all of the answers (and not everyone responded) yielded a cumulative royalty rate of 130%. While it is a striking figure, it is also extremely misleading. What a firm will quote as its desired royalty in a hypothetical survey is quite different from what it can negotiate with real licensees (see our discussion of the horizontal constraints constraining essential patent holders' ability to charge high royalty rates). Moreover, at the time of the questionnaire, the standard was not yet settled, so it was unclear what IP would in fact be essential. In reality, WCDMA technology is being licensed and has achieved remarkable penetration today, which belies any extreme cumulative royalty predictions made several years ago. Not only were Lemley and Shapiro's predictions based on an inaccurate analysis, but they proved to be wrong.

In their Wi-Fi case study, Lemley and Shapiro again incorrectly assume that the mere presence of a large number of rights holders necessarily implies a royalty stacking problem. They also note that one patent lawsuit related to the standard ended with a 6% royalty rate award. Certainly if every patent holder were able to charge 6%, there would be a royalty stacking problem. But that cannot be assumed. First, technological contributions vary substantially across patents, so knowing that one patent was awarded 6% by the courts tells us nothing about the remaining IP—that one patent might have

[82] This assumption raises the problem that in most high-technology industries, most licensors are also licensees, and therefore will be able to reduce any eventual royalty-stacking.
[83] See Lemley & Shapiro, supra note 51, at 2.

been the most pivotal for the standard. Second, court awarded royalty rates often include an element of punishment to ensure that future infringement is deterred. Furthermore, Lemley and Shapiro note that several of the Wi-Fi standard participants have already formed a patent pool, meaning a substantial portion of the standard's IP is available in a single-price bundle.

### E. Conclusion on Perceived Problems

The above developments show that a number of authors have picked on the anti-commons theory to predict adverse possible development in a range of industries. Other authors have expressed scepticism about the anti-commons theory and its possible implications.

The most striking aspect of our survey of the literature is that while the theoretical literature is fairly rich the empirical literature testing the validity of the royalty stacking and anti-commons theories in the real world is sparse and often not very rigorous. More importantly, the existing evidence is mixed. Researchers have found a possible and limited royalty stacking effect in the software industry,[84] a possible effect in the semiconductor industry,[85] though apparently mitigated by market mechanisms (cross-licensing), [86] and no effect in the biomedical industry.[87] A recent paper by Layne-Farrar and Padilla also investigates royalty stacking in a 3G standard for cellular telecommunications.[88] Building on the existing literature, they examine publicly traded firms operating in the cellular telecommunications industry and find - just as others participants in the industries mentioned above have - no consistent evidence of royalty stacking effects. First, they find no robust evidence of such a problem for upstream (R&D-only) firms. Moreover, the results for vertically integrated firms are inconclusive. While some empirical specifications suggest that increased fragmentation lowers vertically integrated firms' market values, other equally reasonable specifications find little or no effect. Perhaps most importantly, using a standard empirical measure of IPR fragmentation established by the literature, the authors find almost no evidence of any fragmentation of IPR within the 3G mobile industry - instead, the rights appear quite concentrated.

## V. Current Attempts to Reshape the FRAND Model: Encouraging Ex Ante Competition to Prevent Ex Post Opportunism

This Part successively reviews the question of what the notion of *ex post* opportunism means (Section A), the proposals made to mandate potential licensors to disclose their licensing on an *ex ante* basis (Section B), the Swanson-Baumol model of *ex*

---

[84] See Michael D. Noel and Mark A. Schankerman, "Strategic Patenting and Software Innovation", *CEPR Discussion Paper No. 5701*, May 2006. Available at SSRN: http://ssrn.com/abstract=922111

[85] Bronwyn H. Hall and Rosemarie Ham Ziedonis, "The patent paradox revisited: an empirical study of patenting in the U.S. semiconductor industry, 1979-1995," *RAND Journal of Economics*, vol. 32 no. 1, Spring 2001.

[86] See Anne Layne-Farrar & A. Jorge Padilla, "Royalty Stacking in High Tech Industries: Separating Myth From Reality", 2006, not yet published. Shapiro, supra note 72, p. 13.

[87] See Heller & Eisenberg, supra note 64.

[88] See Anne Layne-Farrar & A. Jorge Padilla, supra note 86.

*ante* auctions (Section C), the proposals for collective negotiations of royalties (Section D), the proposals for mandatory *ex ante* disclosure of licensing terms to SSOs (Section E), the proposals for voluntary *ex ante* disclosure of licensing terms to SSOs (Section F), the proposals to impose royalty-caps and allocation mechanisms (Section G). Section H presents our conclusions on the efforts to reshape the current FRAND model.

## A. What is Ex Post Opportunism?

As seen above, one of the criticised pitfalls of standard-setting is allegedly the risk that owners of IPR essential to a standard will be able to unduly capture some of the economic value attributable not to the intrinsic value of those rights but to standardization itself. It is argued that if members of an SSO had known *ex ante* the standard being set the terms under which such IPR owners would license their rights, they might have chosen an alternative technology (provided, of course, such alternative technology existed). But once the standard has been adopted and implemented, switching to an alternative technology may have become too onerous for those practicing it. The argument continues that the bargaining power of the owner of essential IPR will have thus increased and that it may be able to extract more favourable licensing terms *ex post* standardization than would otherwise have been the case. This phenomenon is described as *ex post* opportunism.

As noted by Teece & Sherry, the theory of *ex post* opportunism is based on the premise that alternative technologies existed at the time of adoption of a particular standard, and that the SSO in question would have chosen one of them.[89] This is a significant limitation, as in many instances of standard development no suitable alternative technology would have been found to exist. Another often overlooked premise of the theory is that if the licensing terms offered by the IPR owner *ex post* standardization are, on the whole, similar to those offered *ex ante*, then no opportunism can be deemed to have occurred - even if the members of the SSO were unaware of those terms when they cast their votes. Such terms would arguably also comply with the IPR owner's FRAND obligation.

In the following sections we examine current proposals to surmount the allegedly ubiquitous risk of *ex post* opportunism and describe some of the concerns they raise.

## B. The Ex Ante Approach

As mentioned, under traditional standard development procedures IPR holders are encouraged or required to disclose the IPR that they consider may be essential for a standard. They also undertake to make licenses to their essential IPR available on FRAND terms. Licensing negotiations are, however, conducted outside SSOs either on

[89] See Teece & Sherry, supra note 11, p. 10 ("Whether the SSO would have in fact adopted another alternative had it known of the patent claims raises a complex counterfactual question: 'What would the SSO have done if the world had been different?' The answer is likely to be hotly debated, and depends on the particular facts of the standard at issue. The greater the advantages of the (patented) standard over the alternatives that were considered and rejected at the time the standard was originally set, the less likely it is that an alternative would, in fact, have been chosen.")

an *ex ante* or on an *ex post* basis, depending on the willingness of the potential licensor and licensees to enter into such negotiations. *Ex ante* licensing negotiations, in many SSO contexts, thus already take place on a *voluntary* basis. Proposals have, however, been made to *mandate* potential licensors to disclose their licensing terms on an *ex ante* basis. This would allow potential standard implementers to gather information on the costs of implementing a given technology and introduce a degree of price competition between IPR holders.

These proposals are by and large based on a fundamental misconception, as they overlook the fact that *voluntary ex ante* disclosure of licensing terms by IPR owners is already largely the rule.[90] Neither the IPR policy of ETSI, for instance, nor the policies of many other major SSOs prevent IPR holders from disclosing and negotiating licensing terms before a standard is adopted. Much to the contrary, rights-owners have a strong incentive to enter into such *ex ante* negotiations as they increase the likelihood that their technology will be incorporated in the standard.[91] In order to have their technology embodied in the forthcoming standard these firms must find support among the members of the SSO. Consequently, they will seek to demonstrate the superiority of their technology, and may also want to show that the royalties they will charge if their technology is selected will be reasonable. If the process works properly, the firm offering the best overall package (in terms of technology, royalty rates and other licensing terms)[92] will find the greatest number of supporters and its technology will be incorporated in the standard. Furthermore, nothing prevents a standard implementer from approaching an owner of essential IPR to enquire what its licensing terms will be.

One advantage of *voluntary* disclosure is that it provides licensors and licensees with the ability to negotiate mutually advantageous terms specifically suited to the particular circumstances and their particular relationship. The danger with *mandatory* disclosure is that it leads to "one-size fits all" solutions, which would not only homogenize licensing conditions, but also distort the way standards development now fosters competition between and amongst implementing standards participants. In the absence of mandatory disclosure of licensing terms, standard implementers may make different strategic choices. For instance, an implementer may decide to negotiate a licence for patents - even before it is certain they will become essential - as early negotiations may allow it to obtain better licence terms than those which will be available after the standard is adopted. These advantageous license terms would then give it a competitive advantage over a late-to-license implementer, whose costs of implementation

---

[90] See supra note 46.

[91] American National Standards Institute (ANSI) Guidelines for Implementation of the ANSI Patent Policy at 3-4 ("A patent holder may have a strong incentive to provide an early assurance that the terms and conditions of the license will be reasonable and demonstrably free of unfair discrimination because of its inherent interest in avoiding any objection to the standardization of its proprietary technology.")

[92] Potential licensors and licensees may focus their negotiations on factors other than royalty rates, such as for instance cross-licensing of IPR or ex post implementation costs. It would, for instance, be too simplistic to believe that, because A offers on an ex ante basis a lower royalty rate than B, A's technology will overall be cheaper than B's. Differences in implementation costs may be a legitimate reason for B to charge higher royalty rate than A.

might be higher. Compulsory disclosure of licensing terms would eliminate that competitive aspect of standardization processes.[93]

### C. The Swanson-Baumol Model of Ex Ante Auctions

Swanson and Baumol suggest that *ex ante* price competition could take place under a system of auctions run by the SSO.[94] They propose the following thought experiment to illustrate their *ex ante* approach. During the development phase of the standard, the SSO would hold an auction between different technologies. IPR holders vying to have their technology incorporated in the standard would submit offers to license it to downstream standard implementers for a fee (the royalty) calculated per unit of output. The downstream implementers would then choose which technology should win the auction and be embodied in the standard. Swanson and Baumol argue that the outcome of such an auction would provide a benchmark for what is a fair and reasonable royalty, as it would fully reflect the degree of competition between IPR holders existing prior to adoption of the standard. When two technologies compete against each other, competitive pressure would result in lower royalties since profits in licence revenues would be competed away. This reasonable royalty would of course be constrained by the price of the final product in the downstream market. If a proposed royalty were too high, it would result in downstream manufacturers producing at a loss and they would veto the technology during the auction.

As a thought experiment, e*x ante* competition through SSO-sponsored auctions is theoretically attractive and has the potential to lead to efficiency-maximizing outcomes. The model propounded by Swanson and Baumol has, however, some inherent limitations, most of which relate to its practical application.

The first limitation is that the model assumes that an auction between a limited number of firms owning a limited number of substitutable IPR will be possible. It therefore presupposes that competing technologies for every relevant portion of the standard will be available. However, a standard will generally comprise two categories of technologies: (i) those for which there were, at the time of its development, one or several alternatives and (ii) those for which there was no suitable alternative. While price competition may take place between competing technologies,[95] there is no place for such competition between peerless technologies for which no adequate substitute exists. In this (frequent) scenario, *ex ante* and *ex post* licensing will be identical, as holders of non-substitutable technologies will have the same level of market power before and after a standard is adopted. This is one of the fundamental reasons why price competition has a lesser role to play in IP markets than in markets for (fungible) tangible goods. The model therefore offers few insights on instances where complements are standardized, save for

---

[93] See Richard S. Taffet, "Ex Ante Licensing in Standards Development: Myths and Reality", AIPLA. Spring Meeting, Chicago, Illinois, 4 May 2006, at 9-10.

[94] See Swanson & Baumol, supra note 36.

[95] See Skitol, supra note 23, at 734 ("a patent owner's own perspective on RAND terms can be expected to be quite different at the ex ante stage -- when it may be competing with *alternative* technology offerings for the proposed standard -- than ex post (after the standard has been adopted with the owner's technology and those alternatives are no longer viable") Emphasis added.

the possibility of reducing royalties for portions of the standard for which substitutes exist, but which will remain complementary to other IPR incorporated into the standard.

A second drawback of the Swanson and Baumol model of *ex ante* auctions, or of any *ex ante* approach for that matter, is that it may hinder innovation in those cases where the value of an invention is unclear at the moment of standardization. The significance, technical merit and full value of an invention covered by IPR may only be revealed over time, as the standard is implemented. Freezing royalty levels and other terms and conditions at a moment where imperfect information is available to SSO members has the potential to lead to sub-optimal technological choices.

The third limitation raises more serious concerns. The *ex ante* competition model proposed by Swanson and Baumol assumes that owners of essential IPR will seek to charge a royalty that is high enough to compensate their research and development efforts and low enough to win the auction and see their technology embedded in the standard. Some essential rights-holders may however behave strategically by, for instance, committing to charge very low royalties in order to exclude their competitors from the standard concerned.[96] As seen above, vertically-integrated IPR owners, for instance, have a distinct advantage over pure innovators.[97] Their revenues do not depend on the royalties charged given that they can take their profit downstream in the market for the products embodying the standard. By eliminating the pure innovator's technology, vertically-integrated IPR owners would stand to gain in at least two ways: (i) they would weaken a firm that would be a rival in future innovation races; and (ii) they would be best positioned to manufacture products implementing the standard embedding their technology. If such a scenario was to occur, and this is not a remote possibility considering the asymmetry of interests between SSO members, it would amount to transforming standard-setting processes into a mechanism which renders a judgement on comparative value, favouring one business model (vertical-integration) over another (pure innovator).

### D. Proposals for Collective Negotiations of Royalties

Other authors suggest an *ex ante* regime based on joint negotiations of royalties between and among potential licensors and licensees before a standard is formally adopted.[98] The main difference with the Swanson and Baumol model discussed above lies in the fact that royalties would not be determined *ex ante* in an auction, but through collective action in the form of joint negotiations. It is this element of collective action which renders it particularly problematic.

---

[96] In fact, Swanson & Baumol assume that SSO members will not manipulate voting. See Swanson & Baumol, supra note 10, at 17 ("We further assume that the operative SSO voting (or other decision-making) process would not be unduly susceptible to being skewed or biased by one or more SSO members, much as many antitrust decisions in the area have effectively required.") Further, they assume the absence of vertically-integrated firms among essential patent holders. Id at 19 ("We further assume that many downstream firms use the IP to produce perfect substitutes, but that patent owners do not also produce final products.") This of course changes the dynamics of the model as pure-innovators will have much lower incentives to game the auction process along the lines described above.

[97] See Section II C above.

[98] See, e.g., Ohana et al., supra note 63; See Skitol, supra note 23, at 727.

*1. Antitrust Concerns*

Joint *ex ante* negotiations of royalties before the adoption of a standard would trigger serious antitrust concerns as they require that competing firms collaborate during royalty negotiations.[99] Such collaboration would involve restrictions of competition and could therefore fall foul of Article 81(1) EC on several grounds. First, the uniform licensing terms resulting from joint *ex ante* royalty negotiations would lead to a homogenization of the conditions of competition and could facilitate collusion in the downstream product market. As shown above, the existing system of *voluntary* disclosure of licensing terms and bilateral negotiations allows a degree of competition between standard implementers during the standardization process that would disappear with a system of joint negotiations. Second, joint negotiations would produce a "one-size fits all" approach preventing efficient discrimination in licensing conditions. Because standard implementers are not all equally situated (as, for instance, some have wider patent portfolios than others), charging a similar level of royalties to all of them would prevent the adoption of flexible deals that take into account their differences. Third, joint *ex ante* negotiations give rise to the risk that potential licensees would threaten to opt for an alternative technology unless the potential licensor offered a royalty they considered appropriate. Such a threat could amount to a collective boycott.[100] Finally, joint negotiations would also be likely to lead to serious anti-competitive exercises of oligopsony power. As in classic examples of the exercise of buyer power,[101] the negotiations would be primarily aimed at depressing the royalties (i.e. the price) which standard implementers would pay for gaining access to essential IPR.[102] This would diminish the licensors' incentives to invest in R&D and potentially hamper innovation.

A number of authors and antitrust enforcers have drawn attention to these antitrust risks and warned that any such joint *ex ante negotiations* would attract thorough

---

[99] See Swanson & Baumol, supra note 10, at 12-13 ("The standardization process typically involves consultation and agreements among firms that are often competing buyers of IP and also may be competing sellers in the downstream product markets. While joint decision making by competitors can sometimes promote the general welfare, it always entails the danger of misbehavior for anticompetitive purposes, such as the threat of behavior aimed at collusively reducing the price paid for intellectual property.")

[100] Id. ("The SSO members would, in effect, say to the patent holder, 'We will collectively reject a standard that incorporates your patented technology unless you agree to license it to us at pre-specified rates that we collectively find acceptable.' In other contexts, this clearly would amount to a group boycott.") For a perfect example of this risk, see Skitol, supra note 5, at 729, who considers that potential licensees should make use of their buyer power to extract what they consider as a reasonable royalty rate from a potential licensors ("A patent owner's refusal to accept terms satisfactory to the group as a whole would cause the group to consider alternatives to the use of that owner's technology.").

[101] See OFT, "The Welfare Consequences of the Exercise of Buyer Power", Research Paper 16, September 1998.

[102] See Teece & Sherry, supra note 11, at 1955 ("One key issue concerning patents is whether the patent holder must announce the terms for a patent license in advance. If so, there are potential antitrust concerns. Typically, the other participants in the SSO are the most likely potential licensees for the patent. This raises the potential for collusive, oligopolistic 'price fixing' in the technology market."). For a different view, see Skitol, supra note 23, at 739.

scrutiny.[103] That is not to say, however, that such negotiations would necessarily be deemed to fall foul of antitrust rules or not to warrant examination under Article 81(3) EC. As noted by Chairman Majoras of the Federal Trade Commission (FTC), "joint ex ante royalty discussions that are reasonably necessary to avoid hold up do not warrant per se condemnation. Rather, they merit the balancing undertaken in a rule of reason review".[104] Such a rule of reason-type analysis would require weighing their anticompetitive effects against the procompetitive benefits expected.

*2. Application of Article 81(3) EC*

The question thus arises whether a proposed joint negotiations regime could benefit from the application of Article 81(3) EC.[105] As a detailed analysis of these requirements would go beyond the scope of the present paper, we will only address certain features which, in our view, militate against this type of cooperation satisfying the conditions of Article 81(3) EC.[106]

First, such a system would have an adverse impact on the rewards granted to licensors, in particular those obtainable by non vertically-integrated holders of essential IPR. It would therefore not promote technical innovation or economic progress, but on the contrary negatively affect these objectives. Second, it is far from certain that end-consumers would benefit from what would essentially amount to an exercise in rent-shifting between innovators and implementers. There is no empirical foundation to the proposition that the payment of lower royalties to innovators would automatically lead to lower selling prices of the products implementing the standard. Prices at the end-user level depend on a complex number of factors, not least the level of competition between standard implementers at the downstream product level. Just as higher royalties could be internalised by such manufacturers, lower royalties would not necessarily be passed along

---

[103] See Skitol, supra at note 23, p.8. See also "Recognizing the procompetitive potential of royalty discussions in standard setting", Remarks of FTC Chairman Deborah Platt Majoras delivered at Stanford University, 23 September 2005, available at http://www.ftc.gov/speeches/majoras/050923stanford.pdf.

[104] Id. at 7.

[105] In a December 2005 press-release (IP/05/1565, 12 December 2005, "Commission welcomes changes in ETSI IPR rules to prevent 'patent ambush'"), the Commission took note of the fact that ETSI's General Assembly had established a group with the mission to examine possible changes to ETSI's standard-setting rules, in particular on the issue of *ex ante* licensing. It stated that it had "indicated in its Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements (see IP/04/470) that such *ex ante* licensing can have pro-competitive benefits when subject to appropriate safeguards" and that it would follow ETSI's forthcoming discussions with interest. This statement from the Commission cannot be interpreted as meaning that it is prima facie favourable to the joint negotiations approach or to any of the other reforms proposed by firms and commentators in the framework of this ETSI group. It only suggests that the Commission will carefully review the various proposals made to ETSI to ensure their compatibility with EC competition rules. In fact, the same press release made clear that the Commission had carefully reviewed under Article 81 a prior amendment to the ETSI IPR rules designed to limit the risk of "patent ambush" and that it had cleared it subject to some modifications of its content.

[106] See Swanson & Baumol, supra note 10, at 13-14 ("In the case of the typical SSO ... the integration and efficiencies needed to justify outright collective bargaining on royalties are in short supply."); See Shapiro in Setting Compatibility Standards: Cooperation or Collusion? supra note 8 ("While the law has typically looked for integration and risk-sharing among collaborators in order to classify cooperation as a joint venture and escape per se condemnation, ... the essence of cooperative standard setting is not the sharing of risks associated with specific investments, or the integration of operations.")

to consumers. Third, it is not clear that a system of joint negotiations of royalty rates is necessary (i.e. the least restrictive means available) to achieve the objective allegedly sought by the proponents of this *ex ante* regime (i.e. preventing perceived risks of *ex post* opportunism and increasing certainty as to the implementation cost of a given standard) Finally, joint *ex ante* negotiations would eliminate the competition taking place between standard implementers under the current regime of voluntary disclosure of essential IPR.

### E. Mandatory Ex Ante Disclosure of Licensing Terms

Recognising the significant antitrust liability inherent in joint negotiations, proposals have been made within SSOs for the adoption of a policy of mandatory *ex ante* disclosure of licensing terms. It should be noted that mere royalty rate disclosure is likely to be misleading. The picture it would convey would necessarily be imprecise, as the rate itself is but one of the various elements of consideration that need to be agreed upon by licensor and licensee. Under such an *ex ante* policy, SSO members would be required to disclose, prior to the adoption of a given standard, the upper limit of the consideration they would expect in order to license their essential IPR. Although the resulting antitrust risk is markedly lower than that arising from joint negotiations, mandatory *ex ante* disclosure also has the potential to fall foul of Article 81 EC. As seen above, it could give rise to uniform licensing terms and lead to homogenous conditions of competition. It could also facilitate collusion in the downstream product market. Finally, it could give rise to the risk that potential licensees engage in anticompetitive cooperation designed to put pressure on the potential licensor to lower its royalties. Such a threat could amount to a collective boycott.

Nevertheless, an analysis of such *ex ante* disclosure policies balancing their restrictive features with their possible procompetitive aspects could lead to a finding that their overall effect would not be anticompetitive. This assessment would however need to be conducted on a case-by-case basis.[107]

### F. Voluntary Ex Ante Disclosure of Licensing Terms

The final approach aiming to foster *ex ante* competition between technologies and increase transparency calls for the *voluntary* disclosure of licensing terms to SSOs prior

[107] The DOJ's recent review of and decision not to oppose a patent policy submitted to its consideration by the VMEbus International Trade Association (VITA) illustrates the application of a rule-of-reason analysis to one such mandatory ex ante licensing regimes. VITA had requested a business review letter from the DOJ's Antitrust Division expressing its enforcement intentions regarding a proposed patent policy that will impose two requirements on holders of essential patents who participate in standard-setting activities conducted by VITA Standards Organization (VSO). VSO is a non-profit organization that develops and promotes standards for VMEbus computer architecture. First, the policy requires that patent holders make early disclosures of patents and patent applications that may be essential to implementing VITA standards once they are adopted. Second, the policy requires that patent holders declare the maximum royalty rate and most restrictive non-price licensing terms they will require from those who must take a patent license in order to implement the eventual VITA standard. These declarations are irrevocable, but patent holders may submit subsequent declarations with less restrictive licensing terms. Following an analysis under the rule of reason, the DOJ concluded that the proposed licensing policy would not restrict competition among patent holders and that it saw no grounds to oppose it. See DOJ's Business Review Letter to VITA, 30 October 2006, available at http://www.usdoj.gov/atr/public/busreview/219380.htm

to standard adoption. It differs from current practices of voluntary *ex ante* disclosure, which occurs between IPR owners and potential licensees, in that it entails entrusting SSOs with the task of collecting and organising the relevant data concerning the general licensing terms offered by each rights-owner. The broad range of licensing terms thus disclosed could for instance include the maximum royalty rate or rate range expected by the licensor for its essential IPR, possible cross-licensing demands, provisions on exhaustion of IPR and any other relevant licensing consideration it would voluntarily choose to disclose. Once the SSO in question collected these data, they would be made available to any interested member. This approach would significantly reduce the scope for possible antitrust concerns, as discussions of specific licensing terms would continue to occur outside the SSO.

## G. Cumulative Royalty Caps and Allocation Mechanisms

As has been reported in the specialized press, members of certain SSOs have put forward proposals calling for the imposition of price-caps on the royalties that could be cumulatively charged by all holders of IPR essential to a given standard.[108] Such a royalty-capping method would in turn require and be accompanied by a mechanism allowing those royalties to be apportioned amongst the different rights-holders. As will be seen below, these proposals raise a number of significant concerns.

### *1. Royalty Caps*

As seen above, firms participating in standard-setting do not share similar incentives when it comes to rewarding the IPR owners which developed the technologies to be embodied in a given standard. While pure innovators want to be substantially rewarded for the risks involved in developing their technology, pure implementers want to pay as little royalties as possible in order to maintain downward pressure on manufacturing costs. Firms that both innovate and manufacture may have more complex motivations. As standard implementers clearly outnumber pure innovators, it is hardly surprising that attempts are made to constrain such royalties. One such method is the imposition of a royalty cap.

The determination of a royalty cap requires by definition the determination of a ceiling, which holders of essential IPR could not collectively exceed. Although picking a maximum percentage to be allocated between essential IPR holders (e.g. 5% or 10% of the sales revenues of the products implementing the standard) could seem simple, it would involve complex dynamics. As illustrated by the example below, holders of essential IPR do not all place the same importance on the royalties they can obtain from their IP.

---

[108] See for instance "Groups push for action on intellectual property", Financial Times, 21 November 2005 (reporting that a number of mobile carriers made proposals at ETSI to suggest that IPR terms should be agreed before a standard is even set, and argue in favour of putting a cap on the "maximum royalty payment from individual IPR users to the combined IPR holders"); The Register, "Mobile patents war shifts to email", available at http://www.theregister.co.uk/2005/11/29/mobile_email_patents_war/; Andrew Updegrove, "Ex Ante Disclosure: Risks, Rewards, Process and Alternatives", *Consortium Standards Bulletin*, June 2006, Vol. V, No. 6 , at 13.

Let us imagine a scenario where firms A, B, C, D, and E hold essential patents for a given standard. Four of these firms (B, C, D, and E) are vertically-integrated, in that they manufacture products implementing the standard, while the fifth (A) is not involved in any form of manufacturing. While firms B, C, D, and E may be willing to charge each other very low royalties as they can make their profits downstream, firm A needs to charge higher royalties otherwise it would go out of business. This shows that the interests of holders of essential patent are not necessarily symmetrical. Note that in the absence of firm A, firms B, C, D, and E could opt for an entirely different strategy by significantly increasing their royalties in order to raise each other's costs. As is widely acknowledged, this strategy is nothing but a form of price-fixing. Instead of collectively increasing the price of their output (with a significant risk of detection), B, C, D, and E decide to increase the prices of the inputs they supply each other. [109] This will in turn increase retail prices, as well as these firms' profits. By contrast, where the vertically-integrated firms B, C, D and E compete in the product market with X, one or several pure manufacturers without IPR, they may have an incentive to cross-license each other whilst at the same time demanding prohibitive royalties from firm(s) X for their essential patents. They may thereby "squeeze" the pure manufacturer and exclude it from the market.

The picture becomes even more complex if you add to it SSO members which do not hold essential patents for the standard in question, but require such patents to manufacture products implementing the standard. These firms have an undoubted interest in paying the lowest royalties possible. When two competing technologies of equal performance can form the basis of a standard, imposing royalty caps is wholly unnecessary as standards implementers have the ability to play one technology against the other with the result that, in the absence of marginal costs, royalties could end up as low as zero. The situation is, however, different in the presence of a technology for which there is no alternative. In that case, it is argued that, absent collective action, holders of peerless essential patents will be able to charge significant royalties for their technology. As will be seen below,[110] their ability to command royalties is nevertheless limited by the presence of horizontal, vertical and institutional constraints, thereby removing any legitimate justification for a royalty cap.

In this latter scenario, vertically-integrated firms and manufacturing-only companies nevertheless now seek to impose a cap on royalties. The sole purpose and effect of such proposals, however, would be to crush pure innovators for which royalties represent the main or unique source of revenue. The imposition of a royalty cap would directly benefit manufacturing-only firms by lowering the costs of an essential input and would not affect vertically-integrated firms, which, as noted above, can take their profit downstream. Besides the fact that it would raise serious competition concerns, this scenario would have two undesirable effects. One is an unjustified transfer of wealth from pure innovators to those engaged in manufacturing activities. The second is that

---

[109] See, for an analogous example in the telecommunications sector, Damien Geradin & Michel Kerf, *Controlling Market Power in Telecommunications - Antitrust vs. Sector Specific Regulation*, Oxford University Press, 2003, at 46.

[110] See Sections VII A and VII B below.

that such transfer of wealth would drastically reduce innovation by starving innovators from the rewards they need for their costly and risky projects.

*2. Royalty Allocation*

Determining the maximum royalty level is not the only substantial problem that the implementation of royalty caps would occasion. It would also imply the adoption of a methodology to determine how royalties should be apportioned between the different holders of essential IPR. Valuing IPR is a notoriously difficult undertaking and a variety of methodologies have been proposed by academics, practitioners, policy-makers, and courts. From a general standpoint, there is no doubt that royalties should correspond to the "value" an essential IPR brings to a standard. Not all IPR are of an equal value. While some cover "earth shattering" inventions, others concern minor evolutions of existing technologies.

As will be seen in greater detail below,[111] the problem is of course that establishing the true value of a patent requires a complex assessment, thus the temptation to rely on simpler methodologies. Any such methodology would however prove extremely hard, not to say impossible, to implement in a context where multiple firms hold essential IPR and where numerous implementers require licenses to practice a given standard. As standards evolve, the number of essential IPR can change rapidly over relatively short periods of time and hence the proportionate shares of essential IPR held by rights holders will also change. This would lead to a significant degree of instability of royalties, which would require regular review and would have to be recalculated, presumably on a regular basis, to take into account additional essential IPR resulting from the adoption of updates or upgrades to existing standards or the issuance of pending patents. Such a system would make it totally impracticable for two companies to reach an agreement since the royalties the licensor would be allowed to charge would be ever changing. It would also make it impossible for a patent holder to forecast revenues and profits (and, hence, plan investments), since it would never know the future "value" of its patent holding. Royalty allocation would thus prove wholly inappropriate to the standards context.

## H. Conclusion on Efforts to Reshape FRAND Model

SSOs have substantially contributed to the dissemination of innovative technologies and the enhancement of competition between products. It can be argued that, by allowing licensors and licensees to reach mutually satisfactory agreements, the prevailing twin policies of early disclosure and FRAND licensing of essential IPR have played a significant part in this.

The proposals to abandon this proved system misunderstand (or at least misrepresent) and exaggerate the perceived problems with standard-setting processes. Should they be adopted, they have in varying degrees the potential to: rigidify or simply eliminate the bilateral licensing negotiations between holders of essential IPR and

[111] See Section VII E below.

implementers; eliminate the competitive aspect of the standardization process that allows firms to make different strategic choices as to the desirability to license patents before or after the adoption of the standard; create enormous implementation difficulties and delays resulting in significant welfare losses; give rise to serious competition law concerns; and, in most cases, lead to fundamentally flawed and unfair mechanisms of allocating royalties among holders of essential IPR.

## VI. COMPETITION LAW AND SSOS

As described above, most concerns stemming from standard-setting are connected with its effects on the use or enforcement of IPR. The relationship between competition law and IP law has been dealt with at length by many authors.[112] As IPR essentially give their holders the power to exclude competition, it is often one of tension - although both fields of the law share the common purpose of fostering innovation to the benefit of consumers.[113] A similar tension arises in the relationship between competition law and standard-setting. As noted by Hovenkamp, "while standard setting can enable firms to improve along all [...] avenues of business progress, it can also facilitate both of antitrust's twin evils: collusion and exclusion. When standards are created or enforced by competing producers, collusion is possible. When they are used to keep some producers out of the market anticompetitive, exclusion is possible".[114]

The European Commission has been closely scrutinising IP policies of relevant SSOs with a view to preventing the adoption of rules that might infringe Article 81.[115] As seen above, joint *ex ante* negotiation of royalty rates by members of an SSO, for instance, would trigger serious antitrust concerns, such as collusive price-fixing or the anticompetitive exercise of buyer power.[116] Under EC competition law, such collaboration would fall foul of Article 81(1), as it would undoubtedly restrict competition, and it is highly unlikely that it could be justified under Article 81(3).

---

[112] See e.g. Rahnasto, supra note 40; Stephen Anderman, *EC Competition Law & Intellectual Property Rights - The Regulation of Innovation*, Oxford University Press, 2000.

[113] Thomas O. Barnett, Assistant Attorney General Antitrust Division U.S. Department of Justice, "Interoperability between Antitrust and Intellectual Property", Presentation to the George Mason University School of Law Symposium "Managing Antitrust Issues in a Global Marketplace", September 13, 2006 ("[...] strong intellectual property protection is not separate from competition principles, but rather, is an integral part of antitrust policy as a whole. Intellectual property rights should not be viewed as protecting their owners from competition; rather, IP rights should be seen as encouraging firms to engage in competition, particularly competition that involves risk and long-term investment. Properly applied, strong intellectual property protection creates the competitive environment necessary to permit firms to profit from their inventions, which encourages innovation effort and improves dynamic efficiency.")

[114] See Herbert Hovenkamp, "Standards Ownership and Competition Policy" at 5, available at http://ssrn.com/abstract= 889335

[115] See Letter from Angel Tradacete, DG Competition, to Karl Heinz Rosenbrock, ETSI Director-General, of 26 April 2005, referred to in ETSI Directives, Version 20, July 2006, available at http//www.etsi.org

[116] See Swanson & Baumol, supra note 36, at 12-13 ("The standardization process typically involves consultation and agreements among firms that are often competing buyers of IP and also may be competing sellers in the downstream product markets. While joint decision making by competitors can sometimes promote the general welfare, it always entails the danger of misbehavior for anticompetitive purposes, such as the threat of behavior aimed at collusively reducing the price paid for intellectual property.").

Despite the extensive literature devoted to the analysis of alleged problems with the functioning of SSOs identified above, we are not aware of any cases dealing comprehensively with the subject under EC Competition law. The situation appears to be different in the U.S., where several antitrust claims have been settled either by the judiciary or by the antitrust agencies.[117] As noted by Teece and Sherry, although the legal basis for intervention by antitrust authorities has "rarely been articulated clearly",[118] the typical context of an antitrust case under U.S. antitrust laws "involves the claim that, by manipulating the standards-setting process (whether 'actively' in an effort to 'capture' a standard, or 'passively"' by improperly failing to disclose a relevant patent), the patent holder has gained improper market power in the technology market".[119] These claims, generally allegations of anticompetitive attempted monopolisation, therefore concern SSOs' processes rather than behaviour unconnected to the same. Antitrust law has therefore mostly been called upon to deal with issues arising from the implementation and alleged manipulation of SSOs IP policies and rules. Due to the difficulties inherent in interpreting and enforcing these rules, and by virtue of the fact that antitrust law "does not normally impose a requirement of minimum process for private decisions"[120] such as the ones adopted by the generality of SSOs, most commentators view the role of antitrust law in this context with suspicion and caution that antitrust scrutiny should be limited.[121]

By contrast, we are unaware of any successful U.S. antitrust claims in the context of standardization based on the proposition that the standard enhances the right holder's market power *per se* and enables it to charge excessive royalties for its IPR. There are sound antitrust policy reasons for this, not least the fact that, in the absence of any manipulation of the standard-setting process, any additional value to those lawfully-granted IPR resulting from their inclusion in a standard should be of no concern to antitrust law.

In this paper we focus on the applicability of Article 82 to potential claims arising in the context of standard-setting and attempt to ascertain whether it could lead to

---

[117] See for instance *Rambus*, supra note 1 ; the FTC's decision in the Dell case, In re Dell Computer Corp., No. 931-0097 (F.T.C. 1995); Broadcom Corp. v. Qualcomm Inc., No. 05-3350 (D.N.J.); or the U.S. Supreme Court's decision in Allied Tube & Conduit Corp. v. Indian Head, Inc., 486 U.S. 492 (1988).

[118] See Teece & Sherry pose the question: "Is the concern one of a conspiratorial agreement under section 1 of the Sherman Act, or monopolization or attempted monopolization under section 2 of the Sherman Act? If so, presumably the challenger must establish the other elements of any such claims." See Teece & Sherry, supra at note 22, p. 27.

[119] Id. at 27.

[120] See Lemley, supra note 9 , at 137.

[121] Teece & Sherry, supra note 22, p. 28 ("In particular, we are concerned that antitrust intervention may reduce the clarity of the rules, thereby making participation in SSOs more risky and reducing the willingness of firms with valuable IP (and which therefore presumably have much to contribute to selecting the appropriate standard) to participate. If the SSO's rules are unclear, the obvious public policy solution is to encourage SSOs to adopt clearer rules on a going-forward basis. Most significantly, we believe that intervention runs a significant risk of slowing down the standards-setting process, thus delaying the adoption of new standards and new products made in accordance with those standards, to the detriment of consumers and of society generally."); Michael Carrier, "Why Antitrust Should Defer to the Intellectual Property Rules of Standard-Setting Organizations: A Commentary on Teece & Sherry", (2003) 87 *Minnesota Law Review* 2019 ("Although there is a role for antitrust in the analysis of SSO rules, long-settled antitrust jurisprudence dictates that it is only a limited role.")

different results from the ones observed in the U.S. In particular, we consider whether the licensing of IPR reading on a standard can give rise to claims of exploitative abuse under Article 82. To that effect, we began by examining one of the fundamental aspects of SSOs' IP policies i.e. the requirement for companies whose IPR are incorporated into a standard to license those IPR on (F)RAND terms.

## VII. CAN CERTAIN LICENSING PRACTICES OF STANDARDISED TECHNOLOGY AMOUNT TO EXPLOITATIVE ABUSES UNDER ARTICLE 82?

The enforcement of Article 82 presupposes that a company be found to hold a dominant position in one or several clearly defined market(s). The first step in ascertaining whether the practices of a company regarding the licensing of IPR incorporated into a standard may fall foul of Article 82 is therefore to define one or several relevant market(s) for the purposes of EC competition law.[122]

The concept of dominance under Article 82 relates to a position of economic strength.[123] A firm will enjoy such position where it does not face significant competitive pressure and is therefore able act independently. A proper market definition provides the necessary framework to identify the competitive constraints facing an undertaking, in particular demand substitutability, supply substitutability, and potential competition.[124]

### A. Market Definition in Technology Markets

In the context of technology covered by IPR incorporated into a standard, the primary relevant market consists of the market for the licensed technology and its substitutes. These will consist of other technologies which by reason of their characteristics, price (i.e. royalties) and intended use are regarded by the licensees as interchangeable with or substitutable for the licensed technology. However, the key to ascertaining whether such technologies are substitutable for the licensed technology is to examine whether licensees could switch to them in response to a small but permanent increase in the relative price, i.e. the royalties, charged by the IPR owner for its standardised technology.[125] If licensees of the standardised technology can switch to alternative technologies, patented or otherwise, then these alternative technologies form part of the relevant product market.

Although the conceptual framework appears not to differ significantly from that used to define more traditional product markets, defining technology markets is a more

---

[122] See ECJ, 27/76 United Brands Company and United Brands Continentaal BV v Commission [1978] ECR 207 at § 10.

[123] See ECJ, 85/76 Hoffmann-La Roche & Co. AG v Commission [1979] ECR 461 at §38. See also European Commission, DG Competition, "Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses", December 2005, at 11, available at http://ec.europa.eu/comm/competition/antitrust/others/discpaper2005.pdf

[124] See European Commission, "Notice on the definition of relevant market for the purposes of Community competition law", (1997) O.J. C 372, at 13.

[125] The conceptual framework for defining such technology markets is set out, *inter alia*, in the European Commission's "Guidelines on the application of Article 81 of the EC Treaty to Technology Transfer Agreements" supra note 32 at 22.

complex undertaking. The intricacy of the task is compounded when the technology at issue forms part of a standard. The first element that needs to be considered when attempting to define relevant markets for standardised technology is the fact that, in practice, the implementers of a standard generally license a company's entire portfolio of essential IPR for a given standard. They do not license individual IPR on a stand-alone basis. Second, in most circumstances different firms hold complementary IPR essential to a given standard. Companies wishing to practice the standard must therefore obtain licences for those essential IPR from all these firms. As these companies' IPR will typically cover different aspects of the standard, they are complements, not substitutes. This obviously has profound implications for market definition. Third, as will be seen below, holders of essential IPR contained in a standard are subject to a number of vertical, horizontal and dynamic competitive constraints with substantial implications both for market definition and for the assessment of dominance. Moreover, these constraints will differ significantly according to the role played by the IPR owner in the standardization process, i.e. depending on whether the IPR owner is a vertically-integrated firm active in the product market or a pure licensor which does not supply the end-product.

The identification of the vertical competitive constraint resulting from the ability of final consumers to switch between devices using different access technologies is fundamental to market definition in the context of technology licensing. In other words, the existence of a downstream market for the *product* incorporating the standardised technology is paramount to any appropriate definition of the relevant upstream *technology* market. The potential for demand side substitution by consumers of the final product is thus yet another element with significant implications for market definition.

If a hypothetical monopolist licensing essential IPR raised the price of those IPR, i.e. the royalty, some of the increase in costs would be passed on by the manufacturer to final consumers, who could switch to products using alternative technologies.[126] If there are sufficiently close substitute products, then end-users will switch in response to an increase in prices, making the initial increase in royalties unprofitable. The important role of downstream competition in constraining upstream market power in technology markets is well established.[127] Furthermore, prices for the final product may be constrained even if alternative products are attractive to just some customers. The Discussion Paper on Article 82 makes it clear that it is not necessary that all customers consider the products to be substitutable for them to belong to the same product market. What matters is that there exist a sufficiently large number of marginal customers who would consider switching to alternatives if the price of end-products were to increase by a

[126] Economic theory and empirical analysis suggest that there is always pass through of costs to at least some extent, except in highly idealised circumstances.

[127] The Commission's Guidelines on the application of the TTBE recognize this point, stating: "If the downstream product market is competitive, competition at this level may effectively constrain the licensor. An increase in royalties upstream affects the costs of the licensee, making him less competitive, causing him to lose sales." See supra note 32, §23. See also Swanson & Baumol, supra note 36, at note 17 ("There may be no market power in the technology market even if the alternative technology set is small if there is vigorous rivalry from substitute goods in the market for the final product that makes use of the technology".).

small amount.[128] These vertical constraints must be thoroughly examined in order for the relevant market(s) to be correctly defined.

## B. Dominance in Technology Markets

Pursuant to the legal standard established by the European Court of Justice (ECJ), dominance arises where a firm has the power to behave to an "appreciable extent independently of its competitors, its customers and ultimately of the consumers" allowing it to "prevent effective competition being maintained on the relevant market".[129] The key issue in the assessment of the existence of a dominant position is therefore the identification of the competitive pressures to which a firm is subjected. Firms that face significant competitive constraints are not dominant due to the fact that they cannot behave independently of their customers. This holds true whether they have any competitors in the market for the goods or services provided to such customers or not.

It has been argued that holders of IPR essential to practice a standard automatically enjoy significant market power conferred by the process of standardization.[130] The claim is that once a given technology becomes part of a standard, competition between technologies for the essential parts of that standard ends. No longer constrained by such competition, each owner of IPR essential to the standard would *ipso facto* enjoy market power akin to dominance in the market(s) for the licensing of those IPR. It is claimed that this effect would be compounded by the "hold-up" of potential licensees locked into the standardised technology by virtue of the substantial investments made for its implementation. As will be seen below, these positions ignore a variety of horizontal, vertical and dynamic competitive constraints which preclude an automatic finding of dominance on the part of an owner of IPR essential to a standard and can therefore not be sustained.

### *1. Vertical Constraints Stemming from Competition between Rival Standards and Non-Standardised Substitute Products*

The adoption of a standard by a SSO may end effective competition between rival technologies for inclusion in that specific iteration of the standard. However, it will not affect competition between rival standards, either in the guise of downstream competition between substitutable end-products compliant with different technology standards or as competition between standards at the upstream licensing level. As seen above, competitive constraints arising at either the upstream or downstream level will prevent an owner of essential IPR from holding a dominant position in the technology licensing market(s). If licensees of the standardised technology can switch to alternative technologies, covered by IPR or otherwise, the IPR owner will not be able to exercise monopoly power as it will lose sales if it tries to increase price. Similarly, if end-

[128] See Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses, supra note 123, §18.

[129] See Hoffmann-La Roche & Co. AG v Commission, supra note 123.

[130] See Marcus Glader and Sune Chabert Larsen, "Article 82: Excessive pricing – An outline of the legal principles relating to excessive pricing and their future application in the field of IP rights and industry standards", *Competition Law Insight*, 4 July 2005, p.3.

customers can easily switch to substitute products that do not use the licensed technology, such competition between end-products will represent a significant competitive constraint on the owner of IPR essential to a standard. This will hold true whether the substitute products comply with any given standard or not.

These vertical competitive constraints will not affect every IPR owner in the same manner and will vary in accordance with firms' pricing incentives. They will have a weaker effect on vertically-integrated IPR owners than on pure licensors. The reasons behind this finding are intuitive. Whereas vertical integration eliminates the so-called vertical double marginalization problem,[131] which should lead to lower prices, there is an additional effect stemming from vertical integration that tends to increase price. A vertically-integrated IPR owner may have an incentive to raise the royalty it charges at the upstream level, which does not affect its own production costs, to raise the costs of its rivals on the downstream product market. By raising the costs of its downstream rivals the vertically-integrated firm increases its downstream market share and its profits. In many cases, non-vertically integrated IPR owners have incentives to charge lower royalties for the than their vertically integrated counterparts would optimally charge.[132]

2. *Horizontal Constraints Stemming from the Complementary Nature of IPR Incorporated in a Standard*

As seen above, standards usually comprise complementary essential IPR owned by numerous firms. In order to practice the standard, implementers must obtain licences from all such owners of complementary IPR. If other complementary IPR owners charge high royalty rates, a given firm will not be able unilaterally to set a high royalty rate for its IPR. This will be the case even if the company in question holds a monopoly over a given technology. When individually setting their prices, owners of essential IPR will inherently take into account prices set by other owners of complementary IPR, as the market – i.e. the prospective licensees – will only bear a certain total price level. Owners of IPR essential to standard are thus horizontally price-constrained and this absence of pricing independence will preclude a finding of dominance under Article 82.

3. *Dynamic Constraints*

The ability of owners of IPR essential to a standard to price independently will also be affected by dynamic constraints stemming from the dynamic nature of standard-setting. As noted above, competition between members of SSOs usually takes place not only before those SSOs adopt a standard but also after such adoption, i.e. for the inclusion of new releases and next generation technologies. If a firm's technology is included in a standard, that firm will face constraints in pricing any associated IPR because it will continue to depend on the SSO for its position as the standard evolves. The dynamic and evolving nature of standards gives participants in SSOs a number of opportunities to "punish" companies that have previously set what are considered to be

[131] This occurs where different firms are active at different levels of the production chain for the same product. Each will mark up the product in order to make a profit, thus leading to a "double margin".
[132] This phenomenon is explained in detail by Klaus Schmidt in "Licensing Complementary Patents and Vertical Integration" (2006), mimeo.

excessive royalties. First, SSO members may be able to choose not to include a company's contributions in evolutions of the standard.[133] Second, SSO members may be able to choose not to include a company's contributions in future generations of the standard (or in other unrelated standards). Third, if companies gain a reputation for taking advantage of situations where their patents are implicated by a standard, SSOs may begin to insist that the firm commit itself *ex ante* to the precise terms on which it will make its patents available, before including new patents in an upgrade or new generation. This disciplining effect may come as a decision not to include IPR holder's technology in future generations of the standard or even in unrelated standards.

*4. The Role of Dynamic Competition*

The final element which must be addressed when assessing dominance in the standard-setting context is not specific but appears inextricably linked to it insofar as technology standards and licensing occupy a preponderant place in dynamically competitively markets such as the ICT sector. These industries are characterised by dynamic competition for the market whereby drastic innovation makes market leadership highly contestable. By contrast, in other industries, competition takes place primarily through standard price competition and, perhaps, also via incremental innovations.[134]

Dynamic competition consists of a series of races for market dominance. Firms do not compete by slightly undercutting each other but engage instead in what economist Joseph A. Schumpeter described as a "perennial gale of creative destruction" that "strikes not at the margins of the profits of the existing firms but at their foundations and their very lives."[135] In these industries, competition takes place for the market rather than in the market. Firms take part in a race for innovation, striving to introduce new and superior products that will win the market and achieve massive transfers of market shares. In other words, competition comes not from readily available substitutes but from new, innovative products not yet present in the marketplace. Once a market is won, the ensuing dominance will afford substantial benefits but will be fragile and temporary. It can only be maintained if the dominant firm continues to innovate, as the initial race is succeeded by a new wave of investment by rival firms to displace the leading technology with something superior.

---

[133] See Teece & Sherry, supra note 11: "[I]n many industries in which standards play an important role, the fast pace of technological change drives the continual redesign and reengineering of products. For example, the product life cycle in the semiconductor industry is reported to be as low as ten months. Therefore, even if there may be some 'lock-in' of earlier designs, once the existence of the patent is disclosed, the SSO has the opportunity to revise the standards, and manufacturers have the opportunity to redesign their products to avoid incorporating the patented features. In other words, the extent of 'lock-in' may be limited by the pace of technological change."

[134] For a detailed analysis of the competition policy implications stemming from dynamically competitive industries, see Christian Ahlborn, Vincenzo Denicolò, Damien Geradin, and A. Jorge Padilla, "DG Comp's Discussion Paper on Article 82: Implications of the Proposed Framework and Antitrust Rules for Dynamically Competitive Industries", 31st March 2006, available at http://ec.europa.eu/comm/competition/antitrust/others/057.pdf

[135] Joseph A. Schumpeter, *Capitalism, Socialism and Democracy*, Harper Collins Publishers 1984 ed., 1942, page 84.

The implications of such dynamic competition for the assessment of dominance must be carefully considered. The competitive constraints faced by any incumbent stem not only from existing competitors but also from significant forces outside the market. The underlying analysis should be adapted to reflect the special characteristics of these industries. Given their fleeting nature, market shares should not be blindly used as relevant indicators of market power in those industries and supply-side constraints should be carefully considered at the assessment stage. A firm which may *prima* facie appear to enjoy a dominant position could, upon careful consideration, be found not to possess any significant market power justifying the intervention of competition authorities.

### C. Exploitative vs. Exclusionary Abuse under Article 82

Although such a classification is to some extent artificial, a distinction is usually made between exclusionary abuse of a dominant position, covered by Article 82(b) EC and exploitative abuse, covered by Article 82(a) EC.[136] Exclusionary abuse involves behaviour by dominant firms which is likely to have a foreclosure effect on the market. Foreclosure arises where firms with market power are able to deny profitable expansion by existing competitors or to prevent access to the market to potential competitors, ultimately harming consumers.[137] By contrast, exploitative abuse involves behaviour which "directly or indirectly impos[es] unfair purchase or selling prices or other unfair trading conditions".[138]

Contrary to well-established principles of US antitrust law, EC competition law is concerned with dominant firms charging monopoly prices even in the absence of exclusionary conduct.[139] However, as enforcer of the competition rules provided in the EC Treaty, the European Commission has stated on numerous occasions that it does not consider it to be its role to become a price-regulator.[140] Such policy statements reflect the Commission's margin of prosecutorial discretion in an area of competition law fraught with practical difficulties and it is therefore not surprising that cases of excessive pricing

---

[136] See Robert O'Donoghue & A. Jorge Padilla, *The Law and Economics of Article 82 EC*, 2006 Hart Publishing, p. 194.

[137] See Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses, supra note 123, §1.

[138] See Article 82(a) EC.

[139] A recent ruling by the U.S. Supreme Court confirmed the difference in approach, stating: "The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system. The opportunity to charge monopoly prices—at least for a short period—is what attracts 'business acumen' in the first place; it induces risk taking that produces innovation and economic growth. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive conduct." *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP* 540 U.S. 398 (2004).

[140] "The existence of a dominant position is not in itself against the rules of competition. Consumers can suffer from a dominant company exploiting this position, the most likely way being through prices higher than would be if the market were subject to effective competition. However, the Commission in its decision making practice does not normally control or condemn the high level of prices as such. Rather, it examines the behaviour used by the dominant company designed to preserve its dominance." European Commission, *XXIV$^{th}$ Annual Report on Competition Policy*, (1994) at §207; See also European Commission, *XXVII$^{th}$ Annual Report on Competition Policy* (1997) at §77.

are rare and controversial. It can be argued that absent exclusionary behaviour, monopolistic rents should be of no concern to antitrust regulators or courts.

The first argument against the very notion that excessive prices should be dealt with by competition law is an economic one. High prices may enhance welfare where they stimulate innovation and investment. Firms will only engage in high-risk investments when they know that they will gain substantial returns in such investments lead to the creation of a valuable product or service. Furthermore, high prices tend to be self-correcting as they attract market entry, therefore obviating any need for regulatory interference.[141]

The second argument is a practical one. It is extremely difficult to determine whether prices are excessive. According to the legal test first set out by the ECJ in *United Brands*, a price will be deemed excessive where it has no reasonable relation to the economic value of the product supplied.[142] This raises the fundamental problem that competition authorities and courts must decide at which point a price bears no reasonable relationship to the economic value being provided. The lack of clearly defined and accepted methods of determining the economic value of a product compounds the difficulty of the enterprise.[143]

### D. Case-Law of the ECJ and Decisional Practice of the Commission on Excessive Pricing

The Commission has been understandably cautious in reaching findings of excessive pricing, and such cases have therefore been few and far between. They were generally decided several decades ago, and most arose out of policy justifications related to the creation of the EU's internal market[144] or the protection of final consumers.[145] These policy reasons prompted the Commission to pursue cases aimed at preventing companies from taking advantage of trade barriers within the internal market, "partitioning the relevant market"[146]or charging higher prices in the Member States in which the dominant undertaking was "sheltered from effective competition."[147] Under

---

[141] See Robert O'Donoghue & A. Jorge Padilla, supra note 136, at p.605.

[142] See United Brands, supra note 122 , §250.

[143] Director-General Philip Lowe, DG COMP, summed up the practical and conceptual difficulties of pursuing excessive pricing cases in a speech delivered at Fordham University: "On exploitative abuses, there is widespread criticism, some of which we concur with. For example, it is extremely difficult to measure what constitutes an unfair or excessive price. And there are many who say, 'Well, exploitative practices are self-correcting because the exercise of market power to raise prices will normally attract new entrants'. We do not disagree with that either, except that the intervention which is going to be corrective must be, in our view, timely and relevant to the competition problem which is created by the original exploitation". Speech delivered at the 30th Fordham Antitrust Conference in New York, 23 October 2003, available at http://europa.eu.int/comm/competition/speeches/index_2003.html

[144] See United Brands, supra note 122; ECJ, 226/84; British Leyland v Commission [1986] ECR 3263.

[145] See ECJ, 26/75, General Motors v Commission [1975] ECR 1367.

[146] See United Brands, supra note 122, § 236; See also the ECJ's ruling dismissing the action brought by British Leyland against a Commission decision imposing a fine on it for charging excessive amounts for the issue of certificates of conformity in respect of left-hand-drive cars imported into the UK from other EU Member states. See British Leyland v Commission, supra note 144.

[147] Id.

these circumstances, the Commission held for instance that excessive prices infringed Article 82 where they had the effect of "curbing parallel imports by neutralizing the possibly more favourable level of prices applying in other sales areas in the community."[148] Another strand of cases of excessive pricing concerned regulated markets such as telecommunications controlled by former monopolies and markets where firms enjoyed special or exclusive rights conferred by the State which insulated them from competition. In such cases, it was the lack of competition in significant portions of the markets occasioned by the State's past interference and the resulting incumbency advantages of the former monopolies which justified regulatory intervention to curb prices.[149]

In *United Brands*, the Commission imposed a fine on United Brand for charging excessive prices on the sale of bananas in several EU Member states. It compared the prices charged by the dominant firm with those of unbranded bananas and of competitors' bananas, and was greatly concerned with the fact that different prices were being charged in various Member States. On appeal, the ECJ annulled the Commission's decision insofar as it concerned excessive pricing. It nevertheless confirmed that it would be abusive for a dominant firm to charge prices bearing no reasonable relation to the product's economic value. The ECJ suggested that a two-stage test would be required to assess whether prices were excessive. First, a comparison between the selling price and production costs would be used to reveal the profit margin. Although the court did not suggest the level at which the profit would become excessive, it found that the Commission had failed to examine United Brands' cost structure. Second, prices charged by the dominant firm would be compared to those of competitors' products. The ECJ also noted that many ways could be devised to determine whether a price was unfair.

Subsequent Commission decisions and court cases applied and confirmed the test specified by the ECJ in *United Brands*. From these cases, four principal benchmarks emerge for assessing whether prices are excessive: (i) price-cost comparisons; (ii) price comparisons across markets or competitors; (iii) geographic price-comparisons; and (iv) comparisons over time.[150]

The *Port of Helsingborg* case - the Commission's most recent decision dealing with allegations of excessive pricing - suggests that it will apply a demanding standard in assessing whether prices are excessive. The Commission applied the two-stage test used in *United Brands* and held that "even if it were to be assumed that the profit margin [...] is high (or even 'excessive'), this would not be sufficient to conclude that the price charged bears no reasonable relation to the economic value of the services provided. The Commission would have to proceed to the second question as set out by the Court in United Brands, in order to determine whether the prices charged [...] are unfair."[151] In the assessment it conducted, the Commission found insuperable difficulties in

---

[148] See General Motors, supra note 145, §12.

[149] See ECJ, 30/87, Bodson v S.A. Pompes Funèbres des Régions Libérées, [1988] ECR 2479, Commission Decision of 25 July 2001, Deutsche Post II, O.J. (2001) L 331/40,

[150] See Robert O'Donoghue & A. Jorge Padilla, supra note 136, p. 613.

[151] Case COMP/A.36.568/D3 – Scandlines Sverige AB v Port of Helsingborg [2003], not yet published, § 158, available at: http://europa.eu.int/comm/competition/antitrust/cases/index/by_nr_73.html#i36_568

establishing valid benchmarks and insufficient evidence to conclude that the prices charged were excessive. It therefore rejected the complaint at the origin of the case.

## E. Excessive Pricing in the Standard-Setting Context

The role of U.S. antitrust law in the standard-setting context has been limited to dealing with issues arising from the implementation and alleged manipulation of SSOs IP policies and rules. Under U.S. law, an increase in the value of IPR resulting from their inclusion in a standard does not raise antitrust concerns in the absence of fraud or manipulation of the standard-setting process.[152] From a theoretical standpoint, things are different under EC competition law due to the fact that excessive pricing can constitute *per se* an abuse of a dominant position.

Nevertheless, in addition to the general position in favour of a restrained application of Article 82 to regulate prices, significant arguments militate against such regulation in the context of licensing of IPR. As seen above, IPR do not necessarily confer any significant degree of market power on their holders, as adequate substitutes may exist and therefore constrain the holder in the terms on which its rights will be exploited or licensed.[153] The same holds true for IPR incorporated into a standard. Where IPR do confer market power, however, competition authorities must endeavour not to impose restrictions on the IPR holder which would negate the very justification for creating such rights, and which undermine the balance struck by the legislation under which they arise.[154]

Under EC competition law, the need for a cautious approach to the application of Article 82 in the context of IPR has thus far been most widely recognised in relation to refusals to license. The ECJ's case law dealing with this issue has repeatedly emphasised that "exceptional circumstances" must be present before a compulsory licence can be

---

[152] "Adoption of a standard can confer a substantial windfall gain on non-participant patent holders, who (just like participant patent holders) may be able to extract higher royalties for the use of their patents than they would have been able to do absent the standard. But we know of no one who suggests that such conduct is an antitrust violation. Consequently, the 'evil' that the antitrust law seeks to address in these contexts is the manipulation that led to the enhanced value of the patent, not the fact that a patent reads on a standard or the enhanced value per se." Teece & Sherry, supra note 11, p.27.

[153] The Commission's Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses states for instance that "intellectual property rights do not as such confer dominance on the holder. The impact of intellectual property rights on expansion and entry depends on the nature and actual strength of the intellectual property right held by the allegedly dominant undertaking." See Discussion paper, supra at note 123, §13.

[154] As recently noted by the DOJ's Assistant Attorney General Thomas Barnett, "[...] if the government is too willing to step in as a regulator, rivals will devote their resources to legal challenges rather than business innovation. This is entirely rational from an individual rival's perspective: seeking government help to grab a share of your competitor's profit is likely to be low cost and low risk, whereas innovating on your own is a risky, expensive proposition. But it is entirely irrational as a matter of antitrust policy to encourage such efforts. Rather, rivals should be encouraged to innovate on their own – to engage in leapfrog or Schumpeterian competition. New innovation expands the pie for rivals and consumers alike." Supra note 113, p. 13.

granted.[155] Economists have generally framed the debate concerning compulsory licensing around a trade-off between *ex ante* and *ex post* efficiency. On the one hand, mandating a dominant firm holding an IPR to share such right with one or several competitors will stimulate competition in downstream markets, thus promoting *ex post* allocative efficiency. On the other hand, mandatory sharing may reduce the return that the IPR holder will obtain and thus decrease its *ex ante* incentives to invest in innovation and compete dynamically.[156] The economic and policy assumptions underlying this cautious approach to compulsory licensing are as relevant, if not more so, to the subject of excessive pricing of IPR and suggest that increased restraint should be exercised by competition authorities in their analysis of licensing terms. It is against this backdrop that the advisability of pursuing an excessive pricing case in the context of IPR must be assessed.

The seminal excessive pricing test set out in *United Brands* remains the legal standard for determining excessive pricing in the standard-setting context. Neither the Commission's decisional practice nor the ECJ's case law provide additional guidance on suitable benchmarks for determining whether royalties charged by an owner of essential IPR are unfair. Moreover, the intricacy of ascertaining the "correct" or "competitive" price for a given product is exacerbated in the case of intangible goods such as IPR. Pricing IPR, and IPR essential to a standard in particular, is a notoriously thorny undertaking.[157] Moreover, as noted by Dolmans, none of the benchmarks traditionally relied upon in competition law assessments seem particularly appropriate.[158]

First, cost-based methods are ill-suited to be employed as benchmarks for IPR. They entail measuring the effort and expenditure that went into an invention and adding a margin of profit to determine the correct price.[159] As such, they ignore the inspiration, the flashes of creative brilliance from which every invention springs.[160] Cost-based approaches also fail to account for the risk inherent in R&D, which is particularly significant in high-technology sectors and which must be adequately remunerated under penalty of thwarting the incentive to innovate. Moreover, historical costs are difficult to determine and apportion when IPR are licensed in portfolios. A further difficulty relates

---

[155] For instance the ECJ's ruling in *IMS* confirmed that while the refusal by the owner of an IPR to grant a licence cannot in itself constitute abuse of a dominant position, the exercise of the exclusive right conferred on the owner under IP law may, "in exceptional circumstances", involve abusive conduct. See ECJ, C-418/01, IMS v. NDC [2004] ECR I-5039, §34 et seq. See also ECJ, C-241/91 P and C-242/91 P, Magill, [1995] ECR I-743;

[156] See generally Damien Geradin, "Limiting the Scope of Article 82 of the EC Treaty: What can the EU Learn from the US Supreme Court's Judgment in *Trinko* in the wake of *Microsoft, IMS*, and *Deutsche Telekom*", *Common Market Law Review*, December 2005, p. 19, available at http://ssrn.com/abstract=617263

[157] For surveys of the theoretical literature, see Morton I. Kamien, "Patent Licensing," in *Handbook of Game Theory with Economic Applications*, pp. 331-54, Robert J. Aumann and Sergio Hart, Eds., vol. 1. Amsterdam: North-Holland, 1992. See also Suzanne Scotchmer, "Licensing, Joint Ventures, and Competition Policy," in *Innovation and Incentives*, The MIT Press, 2004.

[158] See Dolmans, supra note 48, 201.

[159] See discussion in F. Russell Denton and Paul Heald, "Random Walks, Non-Cooperative Games, and the Complex Mathematics of Patent Pricing," (2003) 55 *Rutgers Law Review* 1183.

[160] See Dolmans, supra note 48 ,202.

to the need to account for the costs of failed projects.[161] Only a limited number of research projects indeed lead to a marketable invention. Finally, price-cost comparisons of IPR must take into consideration the significant transaction costs incurred in IP licensing.[162]

Second, comparing the prices charged by an IPR owner either with prices set by the same IPR in a different technology market or with prices set by competitors is a complex task. Suitable comparators will usually be difficult to identify given that IPR are by definition unique.[163] In other words, finding licensed IPR that are genuinely comparable is difficult at best, and often impossible. Moreover, comparisons with licensing terms offered by an owner for other IPR may be of limited significance given that establishing such terms is, at its heart, a business negotiation between IPR owner and prospective licensee. It encompasses a multitude of variables difficult to quantify and all of which are of appreciable value.[164]

Third, finding suitable comparators for IPR essential to a standard presents the additional difficulty that such essential IPR are by definition complementary, as they all need to be used together to implement a standard. Complementary patents are not substitutes and therefore not comparable.

Given the complexity inherent in settling on an appropriate benchmark among those identified in the Commission's and the ECJ's decisional practice, it is worth considering a range of more or less practical methods that have been used to provide proxies for a reasonable royalty rate to the exclusion of other significant factors of consideration.

Courts, which are often asked to make determinations patent infringement damages referenced to a reasonably royalty determination, do not necessarily rely on any one method. They frequently give great weight to the results of a large number of bilateral negotiations that result in essentially the same terms and conditions with respect to a given patent or patent portfolio.[165] The existence of licensing agreements entered

---

[161] See Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements, (2004]) OJ C 101/2, at § 8.

[162] Swanson & Baumol, supra note 36, at 22 ("The licensing of IP, in addition to involving costs of negotiation, contracting, accounting, monitoring and auditing, also frequently involves the costs of instruction, training and 24-hour assistance"

[163] See Dolmans, supra note 48, 202.

[164] The variables include *inter alia* cross-licensing provisions, exhaustion of rights, upfront fees, jurisdiction, venue, assignability, scope of licence (e.g. products, territory, have made rights, etc.), audit requirements, payment terms and scheduling, currency choice etc.

[165] For instance, in the seminal *Georgia-Pacific* case, a U.S. Circuit Court employed a multifactor test that took into account licence fees for similar patents as benchmarks, measures of the nature and scope of the patent, consideration of the next best alternative to the patent and any cost savings from using it as opposed to older modes or devices, the opinion testimony of qualified experts, consideration of the particular benefits to the licensee and the commercial relationship between Georgia-Pacific and the licensees. See Georgia-Pacific Corp. v. U.S. Plywood-Champion Papers Inc. 446 F.2d 295 (2nd Cir. 1971); Interactive Pictures Corp. v. Infinite Pictures, Inc., 274 F.3d 1371 (Fed. Cir. 2001); Radio Steel & Mfg. Co v. MTD Prods., Inc., 788 F.2d 1554 (Fed.Cir. 1986); Lindemann Maschinenfabrik GmbH v. Am. Hoist & Derrick Co., 895 F.2d 1403, (Fed. Cir. 1990).

into following arms-length negotiations between IPR holder and licensee is arguably the best indicator of a reasonable royalty rate. U.S. courts have held, for instance, that "where an established royalty rate for the patented inventions is shown to exist, the rate will usually be adopted as the best measure of reasonable and entire compensation".[166] Where prior licences constitute an "established royalty," then the established royalty will set a minimum recovery by the patent owner. In order to be considered "established", royalties must first meet five criteria: (1) they must be paid or secured before infringement began; (2) they must be paid by a sufficient number of persons to indicate reasonableness of the rate; (3) they must be uniform in amount; (4) they must not have been paid under threat of suit or in settlement of litigation; and (5) they must be for comparable rights or activity under the patent.[167]

Perhaps due to the difficulties in negotiating acceptable terms for a patent licence, a significant number of patent holders rely instead on general rules of thumb.[168] As a Harvard Business School case study observes, "[e]ven organizations that are aware of their intellectual assets tend to choose royalty rates based on a 'rule of thumb' rather than rates based on quantitative metrics or analysis of profitability."[169] A common rule calls for 5% of sales revenues or 25% of operating profit margin to be paid to the patent holder.[170] This 5% rate does not refer to a maximum cumulative royalty rate, but to a possible rate for a patent portfolio owned by a single entity.

All the methods referred are nevertheless far from yielding optimal or even generally acceptable results. As has been noted by other, the imprecise nature of the legal test for excessive prices simply reflects the fundamental problem that there is no workable definition of a competitive price, in particular where IPR are to be priced.[171] In sum, it can be argued that the difficulty, complexity and potential for error with significant costs inherent to any attempt to determine a competitive price is compounded where IPR are at stake. This leads us to conclude that the well-founded prudence and restraint which competition authorities and courts have shown in pursuing cases of excessive pricing should be increased where the prices under scrutiny relate to the level of royalties charged by holders of essential patents for a technology embedded in a standard.[172]

---

[166] See Hanson v. Alpine Valley Ski Area, Inc., 718 F.2d 1075, 1078 (Fed. Cir. 1983).

[167] See Mobil Oil Corp. v. Amoco Chemicals Corp., 915 F.Supp. 1342 (D. Del. 1994).

[168] As a Harvard Business School case study observes, "[e]ven organizations that are aware of their intellectual assets tend to choose royalty rates based on a 'rule of thumb' rather than rates based on quantitative metrics or analysis of profitability." Intellectual Asset Valuation, Harvard Business School, Case Study N9-801-192, p. 4. The case study was based on a paper originally written by Gavin Clarkson, Olin Fellow for Law, Economics, and Business at Harvard Law School.

[169] Intellectual Asset Valuation, Harvard Business School, Case Study N9-801-192, p. 4. The case study was based on a paper originally written by Gavin Clarkson, Olin Fellow for Law, Economics, and Business at Harvard Law School.

[170] See Lauren Johnston and Richard T. Rapp, Modern Methods for the Valuation of Intellectual Property, 532 PLI/Pat 817, pp. 817-42 (1998).

[171] Padilla & O'Donoghue, supra note 136, at 626.

[172] This potential for error and the resulting need for caution are encapsulated by the DOJ's Deputy Assistant Attorney General Gerald Masoudi: "In the United States, we have stated our antitrust priorities as an explicit hierarchy. At the top of this hierarchy is enforcement against cartels. As our second priority, we

## F. Article 82 Reform and Commission Policy Pronouncements on Exploitative Abuse

The European Commission launched in 2005 a reflection on the legal and economic soundness of the principles underlying its enforcement of Article 82. The first tangible element of this reflection was the publication of a "Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses" proposing an analytical approach to be used by the Commission in its assessment of such abuses.[173] The focus on exclusionary behaviour appears to reflect Commissioner Kroes' declarations that the European Commission's enforcement policy should give priority to exclusionary abuses.[174] The Commission's Discussion paper generated numerous comments submitted by academics and practitioners and was followed by a public debate held in June 2006. It should be read in conjunction with a Report prepared by the Economic Advisory Group on Competition Policy (EAGCP), an independent group of experts commissioned by Commission, entitled "An economic approach to Article 82".[175] The main thrust of the Report is a call for an economics-based approach to the application of Article 82, implying that the assessment of each specific case should not be undertaken on the basis of the form that a particular business practice takes but rather should be based on the assessment of the anti-competitive effects generated by business behaviour.

Although the Commission's Discussion paper does not deal with exploitative behaviour – which the Commission intends to address at a later stage of its reflection on reform of Article 82 – it contains a number of interesting general policy pronouncements. Those concerning the application of Article 82 to innovative industries are particularly relevant to the application of the excessive pricing doctrine in the standard-setting context. Echoing similar recommendations made by the EAGCP,[176] the Discussion paper recognises that IPR are often the result of substantial investments entailing significant risks and that in order to maintain incentives to invest and innovate the dominant firm must not be unduly restricted in the exploitation of valuable results of the investment.[177] It is hoped that the announced reflection on the assumptions underlying the Commission's analytical approach to exploitation will build on the sound pronouncements contained in its current Guidelines on the application of the TTBE:

---

review mergers [...]. And third, we analyze nonmerger civil cases - which include unilateral conduct - in a cautious and objective manner, mindful that it is often difficult to tell the difference between anticompetitive conduct and good, hard competition. It is worth noting that most IP-related practices, such IP licensing, fall into this third category. As the hierarchy moves from per se conduct to nonmerger civil actions, it moves from the least chance of false positive to the greatest, and our level of caution increases accordingly" Masoudi, supra note 25.

[173] See supra note 123.

[174] See Commissioner Neelie Kroes, "Preliminary Thoughts on Policy Review of Article 82", speech delivered before the Fordham Corporate Law Institute, New York, 23rd September 2005.

[175] See Report by the EAGCP , "An economic approach to Article 82", July 2005, available at http://ec.europa.eu/comm/competition/publications/studies/eagcp_july_21_05.pdf

[176] According to the EAGCP, the Commission should be particularly reluctant to interfere where dominance stems from the existence of IPR. Given that IPR have been granted by the state in order to create market power and to give innovators a reward for their efforts, it would be inconsistent for the state, i.e. competition authorities, to interfere with these rights ex post and take market power away. See Report by the EAGCP, supra note 175, at 44.

[177] See Discussion paper, supra note 123, §235.

"It must be kept in mind that the creation of intellectual property rights often entails substantial investment and that it is often a risky endeavour. In order not to reduce dynamic competition and to maintain the incentive to innovate, the innovator must not be unduly restricted in the exploitation of intellectual property rights that turn out to be valuable. For these reasons the innovator should normally be free to seek compensation for successful projects that is sufficient to maintain investment incentives, taking failed projects into account. Technology licensing may also require the licensee to make significant sunk investments in the licensed technology and production assets necessary to exploit it. Article 81 cannot be applied without considering such ex ante investments made by the parties and the risks relating thereto. The risk facing the parties and the sunk investment that must be committed may thus lead to the agreement falling outside Article 81(1) or fulfilling the conditions of Article 81(3), as the case may be, for the period of time required to recoup the investment."[178]

In our opinion, determining the level of compensation sufficient to maintain investment incentives of IPR' owners is an undertaking that requires a complex balancing and is best left to the interaction of market forces.

## G. Is There a Role for FRAND under Article 82?

It has been argued that FRAND commitments have a prominent role to play under Article 82. One claim is that the obligations imposed on an IPR owner by FRAND and by Article 82 are similar if not altogether identical, and the breach of the former by a dominant company would necessarily imply an infringement of the latter.[179] Others have asserted that competition law imposes a duty on IPR owners to license their IPR essential to a standard on FRAND terms.[180]

In our view, such claims are patently untenable and will therefore be addressed only briefly. They reflect either a misconstruction of the meaning of FRAND, as used in the standards context, or a misconception of Article 82.

As seen above, specific licensing terms can be deemed to comply with the FRAND commitment if they are the result of market-driven, arms-length negotiations between IPR owner and licensee. FRAND is a matter of contract law and as such its interpretation and enforcement are to be carried out by the courts on a case-by-case basis that takes into account the situation of specific licensor and standard implementer. EC competition law does not and should not require that industry standards be made available on FRAND terms. This also raises the same difficulty of the above, what is FRAND. If the FRAND commitment mirrors the obligations on which a dominant undertaking is in any event subject under Article 82, there is no need to have recourse to it. If, on the other hand, the FRAND commitment goes beyond the requirements imposed under Article 82, it has no role to play in the application of this provision of EC competition law.

In sum, FRAND commitments are not an adequate, relevant or useful instrument for the application of Article 82. In our view, arguments to the contrary must be viewed

---

[178] See supra note 125, §8.

[179] See John Temple Lang, "Abuse under Article 82 EC – Fundamental Issues and Standards Cases", paper presented at the 2006 St Gallen conference.

[180] See Glader & Larsen, supra note 130.

as reflecting their authors' stance on what the law should be and (importantly) not what the law actually is.

## H. Patent Ambush and Article 82

The final topic we would like to address briefly is that of "patent ambush" under Article 82. Patent ambush occurs where an IPR owner wilfully and knowingly fails to meet its duty to disclose to a SSO ownership of IPR which are subsequently incorporated in the standard under adoption. The fundamentally anticompetitive element in a patent ambush is the deception used by the holder of IPR to secure inclusion of its patents in the standard. As seen above, the issue has been dealt with at length by U.S. commentators in the wake of several high-profile cases, most notably *Rambus.*[181] Patent ambushes can give rise to claims under a variety of legal provisions, such as those concerning fraudulent behaviour. In U.S. antitrust law, they can also fall under the prohibition of anticompetitive attempted monopolisation.

The situation is different under EC competition law. By contrast to the provisions of the Sherman Act, Article 82 does not censure the acquisition or attempted acquisition of monopoly power, i.e. dominance, through anticompetitive means. Nor does it censure the mere possession of a dominant position. It only proscribes anticompetitive behaviour by firms that have already attained such a position of dominance. The implications for the application of Article 82 to patent ambushes are therefore clear. If the IPR owner only obtained its dominant position in the market for the standardised technology *ex post* the deceptive behaviour, it would be difficult to make a case for the applicability of Article 82. For Article 82 to apply, it is necessary that the IPR owner enjoy a dominant position *ex ante.*

One way to circumvent this apparently insurmountable conceptual difficulty would be to argue that the owner already enjoyed a dominant position, which it abused through the patent ambush, in a market for its IPR. This approach would pose at least three significant problems. First, given that IPR do not necessarily confer dominance on their holders, it would require a narrow definition of the relevant technology market in which dominance would be found. And if dominance could be found to exist *ex ante* the standard being adopted, it is not easy to see how the ambush would have strengthened the IPR owner's dominance. Second, it is unclear how relevant markets would be defined, i.e. would a market for the standardised technology and a distinct market for the owner's IPR be found to exist? Third, it would imply doing away with any notion of causality in the application of Article 82. In such a case, the abuse i.e. the acquisition or

[181] The well-documented *Rambus* saga provides a clear example of the difficulties in assessing whether a firm has been involved in patent ambush. For a detailed recapitulation of the vicissitudes of the case and its protracted procedural history, see the Federal Trade Commission's (FTC) Opinion finding that by concealing its ownership of certain patents, Rambus persuaded the JEDEC, a SSO, to adopt two standards for computer memory (SDRAM and DDR SDRAM) incorporating those patents which, in turn, significantly contributed to Rambus's unlawful acquisition of monopoly power. See In the Matter of Rambus, Inc., Docket No. 9302, available at http://www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf.

strengthening of monopoly power in the market for the standardised technology would not be have been linked to the existence of a dominant position in the same or in a distinct relevant market.

In our opinion, these conceptual and practical obstacles do not imply that EC competition law has no role to play in averting patent ambushes. This role should, however, be a preventive one and is best achieved through the reinforcement of SSOs' rules on disclosure of essential IPR. Recent amendments to ETSI's IP policy introduced following an investigation carried out by the Commission under Article 81 provide an example of this preventive approach.[182] The changes strengthened the requirement for early disclosure of essential IPR during ETSI's standard-setting activities and should therefore contribute to minimising the risk of patent ambush.

## VIII. CONCLUSION

Throughout this paper we have shown that the FRAND licensing regime that is supported by the IPR licensing policies of most SSOs has performed well by allowing potential licensors and licensees to negotiate mutually acceptable agreements taking account of the objectives and needs of each party. In recent years, this system has, however, been under attack by firms wishing to pay lower levels of royalties to innovating firms. We show that such attacks are often based on theories whose dire predictions have not been verified in practice. Moreover, the remedies proposed by those outlining the inadequacy of the FRAND regime raise serious conceptual and practical difficulties, and if applied would seriously harm pure licensors' incentives to innovate.

[182] See the European Commission's press release IP/05/1565 of 12 December 2005, available at http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1565&format=HTML&aged=1&language=EN&guiLanguage=en.

## TABLE OF CONTENTS