To FRAND, or Not to FRAND, That Is the Question: Analyzing FRAND Terms and Proposed Alternatives

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Abstract: Standards are the building blocks of present-day smart technology, allowing worldwide interconnection and interoperability, but the placement of globally accepted standards has resulted in some challenging issues from the patent licensing perspective.

Standard Setting Organizations (SSOs) require the owners of Standard Essential Patents (SEPs) to commit to Fair, Reasonable and Non-Discriminatory (FRAND) Licensing Terms in order to ensure the availability of standards and to protect the manufacturers of standard-compliant products from the possible anti-competitive behavior of the patent owners. However, the meaning of FRAND has not been defined, which means that the interpretation of what constitutes FRAND licensing has been left to the patent owner and the implementer to work out in the course of licensing negotiations and, in case of disagreement, to courts and competition authorities to determine.

The ambiguous meaning of FRAND commitment and increased SEP litigation have attracted attention in the industry and compelled academics as well as judicial authorities to ponder what the policy behind such licensing terms should be. In addition to providing an in-depth analysis of FRAND commitment from legal and economic aspects, this thesis considers six different proposed alternative models that claim to either fix or replace the current FRAND licensing model with a better solution. After uncovering the strengths and weaknesses of each proposal from legal and economic theoretical perspectives, this thesis argues that FRAND terms are still a better and more workable option compared to the alternatives and, in fact, the system is not in need of comprehensive repairing. Instead, this thesis claims that FRAND should be improved by clarifying the meaning of FRAND for the negotiating parties.

Keywords:

Standard Essential Patents, Fair, Reasonable and Non-Discriminatory Terms, patent licensing

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1 INTRODUCTION

Standards are everywhere – they are the building blocks of present-day smart technology, allowing global interconnection and interoperability. Particularly wireless communication standards, like 2G, 3G, 4G and Wi-Fi, have enabled billions of people to connect all around the world regardless of location or distance. In addition, nearly all industries of economy rely upon wireless standard-compliant technologies and, hence, standards have truly become a common ground for innovation and growth. The current deployment of 5G and the development of 6G, the next generations of mobile standards, only emphasize the growing importance of standards and standardized technology in the future. Thus, the economic potential of standardization and digitalization is enormous. The outcome of the absence of standards would be harsh; different products and devices would not have connectivity or be compatible with each other, customers would be mainly restricted to one manufacturer, and manufacturers would be forced to invent their own individual technological solutions for all their needs. Therefore, standards are vitally important to foster innovation, research and development, and investments in the field of technology as well as to provide other benefits to business and society, such as economies of scale and welfare maximization.

The process of developing and setting globally accepted standards takes place in Standard Setting Organizations (SSOs) where the industry stakeholders participate in open, transparent and consensus-based standardization activities. Once a standard is set, SSOs select and declare certain patents to be essential for use in a specific standard based on whether such patents are needed to comply with the standard and the implementation of the standard would otherwise infringe the claims of such patents. Thus, such patents are referred to as Standard Essential Patents (SEPs). Patent holding companies are attracted to invest in research and development and standardization due to the prospect of SEP licensing on an industry-wide scale whereas the manufacturers of standard-compliant products are interested in the economy of scale and product sales revenues enabled by standards. However, once a standard is set and becomes widely accepted, it can provide the SEP owner substantial market power over others in the industry for two reasons. Firstly, the market becomes tied on the specific standard which means that the standard is adopted by the industry participants. Secondly, a patent is an exclusive right against others from exploiting a protected invention which, in this case, is essential to implement the standard. Hence, if the SEP owner is granted an exclusive right, the manufacturers may not legally produce the products complying the standards. Such situation defeats the objective of standardization, that is, promoting a wide adoption of standards. In order to tackle this concern, most SSOs have adopted intellectual property rights (IPR) policies that require SEP holders to commit to Fair, Reasonable and Non-Discriminatory (FRAND) Licensing Terms.

FRAND commitment is intended to protect the implementer of standardized technology from potential anti-competitive behavior of the SEP owner, while also ensuring that the patent owner receives an appropriate reward for its investment in research and development in patented invention. SSOs have not, however, clearly determined or expressed what fair, reasonable and non-discriminatory licensing means, leaving the notion of FRAND commitment ambiguous. Moreover, SSOs have often decided that the licensing negotiations between the patent holder and the implementer are commercial issues conducted outside the standard-setting environment. In practice, this means that the burden of interpreting FRAND has been left to the negotiating parties, which has turned out to be a notably challenging task for the parties. Particularly the conflicting economic interests of the SEP owner and the implementer have resulted in an array of issues, sometimes leaving the parties unable to agree on a license agreement and forcing them to turn to courts – a tendency that has emerged in increased SEP litigation. The vague meaning of FRAND commitment has attracted attention in the industry and compelled also academics and judicial authorities to ponder what the policy behind such licensing terms should be, the outcome being a range of differing and even opposing views attempting to solve the problematic nature of FRAND. Thus, there is no consensus among scholars what the FRAND terms should mean.

Unsurprisingly, the SEP licensing model and the judicial decisions interpreting FRAND commitment have received criticism. Many scholars argue that the FRAND terms represent a gap in the system that excessively complicates and hampers the licensing negotiations between the SEP holder and the implementer. Consequently, some proposed alternatives have surfaced either to fix the existing deficiencies of FRAND or to replace FRAND commitment with a new and allegedly better option, claiming to solve many of the issues surrounding SEP licensing. Therefore, the underlying research question of this thesis is whether SEP licensing on FRAND terms is a workable and attainable system or inherently broken and requires fixing. It seems that the notion of FRAND is admittedly puzzling and complicates the licensing negotiations between the patent owner and the implementer, which has justly triggered academics to propose other alternatives. Nevertheless, the hypothesis of this thesis is that the current system based on FRAND terms is most likely still the best available option to address the concerns of SEP licensing because there has not been a shift to other alternative licensing models in the standardization industry. For the sake of determining whether this is the case, this thesis provides an in-depth analysis of FRAND commitment in comparison to the proposed alternatives. In order to achieve the objective set forth, it is necessary to understand first where FRAND commitment stands at this moment, in both academic and judicial spheres, before the alternatives repairing or replacing FRAND are considered.

Concerning the structure of this thesis, chapter 2 defines the research methodology and limitations of the research – it is clear that the exceptional nature of FRAND as an emerging *de facto* regulatory instrument sets certain conditions to the study.

Chapter 3 introduces standards and SSOs in general but primarily concentrates on the practice of SEP licensing on FRAND terms. The undefined concept of FRAND commitment is explained by addressing the economic and legal approaches of the principle and by exploring the different – even contradictory – theories and interpretations of FRAND. Basically, the chapter attempts to answer the first research question of what is a FRAND commitment in SEP licensing and why is it surrounded by controversy and discord. Hence, the challenging nature of FRAND is analyzed and construed from a theoretical point of view.

The second research question of this thesis is covered in chapter 4; does the existing case law provide any actual evidence of whether FRAND terms work in practice or not. The chapter assesses multiple decisions of courts and competition authorities interpreting and applying FRAND, particularly landmark SEP cases in the European Union and the United States. For instance, the famous US judgement of *Microsoft v. Motorola*[1] and Court of Justice of the European Union (CJEU) decision of *Huawei v. ZTE*[2] are referred, just to name a few. Thus, an overview of the most well-known and relevant cases is provided in order to grasp the disputed concept of FRAND better. The chapter indicates both clear trends and challenges in SEP licensing litigations, which provide some clarity on how the judiciary has interpreted FRAND, but does not necessarily simplify or comprehensively solve the issues. In fact, chapter 4 only further affirms that a one-size-fit all solution does not exist and precise case-by-case analysis is always required in SEP licensing disputes.

Chapter 5 covers the most common arguments against the current SEP licensing model as well as criticism towards the case law interpreting FRAND commitment in order to reveal the main reasons why scholars have begun to question the system in the first place. Once these specific challenges identified with SEP licensing are well-established, the chapter introduces six different alternative models proposed to correct the shortcomings of FRAND terms: binding arbitration and the baseball-style arbitration commitment by Lemley and Shapiro[3]; interim

[1] *Microsoft Corp. v. Motorola, Inc.*, 854 F.Supp. 2d 993 (W.D. Wash. 2012). *Microsoft Corp. v. Motorola, Inc.*, 864 F.Supp. 2d 1023 (W.D. Wash. 2012). *Microsoft Corp. v. Motorola, Inc.*, 904 F. Supp. 2d 1109 (W.D. Wash. 2012). *Microsoft Corp. v. Motorola, Inc.*, CASE NO. C10-1823JLR (W.D. Wash. Apr. 25, 2013).
[2] Case C-170/13 *Huawei Technologies Co. Ltd v ZTE Corp., ZTE Deutschland GmbH* [2015] Digital reports.
[3] Mark A. Lemley and Carl Shapiro, 'A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents' (2013) 28 Berkeley Technology Law Journal 1135-1166.

payment by Nikolic[4] as an alternative remedy for injunctions; royalty-free commitment; non-assertion commitment and the NAAST policy by Rysman and Simcoe[5]; *ex ante* licensing terms; and the *ex ante* pseudo-pool approach by Contreras[6]. Thus, the third research question of this thesis is whether SEP licensing model based on FRAND is "broken" and can the suggested alternatives "fix" the system. The strengths and weaknesses of each proposal are uncovered from legal and economic theoretical perspectives, eventually all of them proving to be more or less unfit to repair or replace the existing practices of SEP licensing on FRAND. For these reasons, this thesis argues that FRAND terms are still a better and more workable option compared to the suggested alternatives and, in fact, FRAND is not in the need of comprehensive repairing. In the last decades, the industry of standardized technology has developed and grown rapidly due to successful and prospective collaborations between the industry participants, which supports the idea that FRAND terms can work, despite of their downsides.

Finally, the conclusion summarizes the findings of this thesis and argues further how the current SEP licensing system based on a commitment to FRAND terms could be improved and what direction should the industry take.

[4] Igor Nikolic, 'Who needs injunctions? Alternative remedies in standard essential patents disputes', in Eleonora Rosati, Stefano Barazza, et al. (eds), *Journal of Intellectual Property Law & Practice* (Oxford University Press 2017, Volume 12 Issue 2) 126-135.
[5] Marc Rysman and Timothy Simcoe, 'A NAASTy Alternative to RAND Pricing Commitments' (2011) 35 Telecommunications Policy 1010-1017.
[6] Jorge L. Contreras, 'Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust Law Journal 47-97.

2 RESEARCH METHODOLOGY

The peculiar nature of SEP licensing on FRAND terms as an emerging *de facto* regulatory instrument sets certain conditions to my research. On the one hand, FRAND commitment is not a legal rule per se since it is not regulated in any legislation or law but it is a principle of contractual nature set out in IPR policies of private sector organizations. On the other hand, disputes and litigation between the SEP holder and the implementer have brought FRAND terms to the center of attention of courts and competition authorities, transforming to an important doctrine of licensing with multiple functions from the point of view of contract law, competition and antitrust law, and patent law. Nevertheless, such principle draws on commercial and economic values and is fundamentally outside the limits of positive law. As traditional legal research and the method of legal doctrine describe the *lex lata* – what the existing law is – and prescribe the *lex ferenda* – what the law should be – but does not go outside the law, it is clear that this thesis analyzing FRAND and the proposed alternatives is of an interdisciplinary nature and requires going beyond the traditional borders of the discipline of law. Furthermore, I strongly believe that the legal system should not be studied in isolation of the surrounding world but should be looked at from a broad external perspective that brings also other values into play.

For these reasons, I approach the complex notions of SEP licensing and FRAND commitment by the means of theoretical research from the legal and economic aspects, seeking to explain the nature of FRAND terms in the context of legal system but also to describe the economic thinking behind such contractual commitment. Theories give reasons for a phenomenon and, in many cases, challenge existing knowledge. Hence, such theoretical research fosters the conceptual understanding of SEP licensing as a challenging occurrence in the standardization industry and also allows further analysis of the alternatives that have been proposed to either fix or replace the current FRAND licensing model. A descriptive and explanatory method is used to address the topic, focusing on the underlining legal and economic approaches and concepts behind FRAND commitment. Understanding why SEP licensing on FRAND terms can be perceived to represent a gap in the existing system requires not only understanding the legal framework but also the behavior of the negotiating parties that is fundamentally steered by economic factors and backgrounds – thus, pursuing only normative questions, as typical legal research usually does, is insufficient. That being said, my study has certainly a doctrinal component. The existing laws applying to patent licensing practices are described but, in particular, the evolving case law concerning SEP licensing disagreements is covered in depth to reveal the legal conceptual basis of FRAND justified by judicial authorities.

SEP licensing, in particular the somewhat uncertain and ambiguous notion of FRAND commitment, is a topic that has attracted much attention among academics in the fields of law and economics. As a consequence, there is a vast number of studies and literature to choose from and, hence, the task of collecting and selecting data for my research was rather straightforward. The main body of research of this thesis constitutes of academic and journalistic sources, such as legal and economic literature and journals, as well as relevant guidelines, policies, legislation and case law. Furthermore, some distinguished online sources are included to provide aspects of recent developments and to showcase different opinions and comments that have surfaced in blogs or other similar sites. A deductive method is used to examine and analyze the research work of accomplished scholars as well as the judgements and decisions of courts and competition authorities at both international and national levels, mainly concentrating on the European Union and the United States. Nonetheless, it is worth noting that the large extent of available data and sources makes it impossible to cover all published works that deal with the topic and, unfortunately, something is inevitably left out from the scope of this thesis.

The practice of SEP licensing as a subject of research is also broad and packed with various issues and challenges. So, when taking into consideration the limited number of pages of the thesis, some limitations on the topic and the research are definitely in order. This thesis focuses strictly on the analysis of FRAND terms and their meaning and interpretation, whether such FRAND commitment is an attainable and workable solution, and whether any of the six different proposed alternative models claiming to either fix or replace the current SEP licensing model are better or worse compared to FRAND. The following matters concerning SEP licensing, although also very interesting issues for research purposes, are not covered in this thesis: Firstly, the obscurity and disagreements relating to whether a patent is truly “essential” to a specific standard. Secondly, the complications and challenges of portfolio licensing, that is, licensing SEPs together with other patents. Thirdly, the level of licensing – the issue of access to all vs. license to all – is shortly described in chapter 3 but the debate surrounding the topic is not addressed in depth. Fourthly, patent pools are mentioned in chapter 4 as a part of the alternative of pseudo-pool approach suggested by Contreras but patent pooling in general as a way of licensing SEPs is not considered any further. Lastly, although the right to seek an injunctive relief in case of SEP infringement is well scrutinized in this thesis, the problematic global aspect of injunctions, that is, the anti-suit injunctions (and even anti-anti-suit injunctions and anti-anti-anti-suit injunctions) are not covered.

3 STANDARD ESSENTIAL PATENTS AND FRAND TERMS

Smartphone is undeniably one of the most important and powerful pieces of modern technology that has changed our lives for good. Few clicks and I can call and text my family members and friends, reply to an urgent work email and post on my social media accounts – all because my phone shows full four bars of connection to the mobile network. Our home Wi-Fi connection, on the other hand, enables me to control our other smart devices, such as the audio system, through my phone but sometimes, instead of blasting my playlists from the stereo, I like to just connect my phone to my Bluetooth headphones and enjoy my time listening to a new episode from my favorite podcast. It is rather impressive how smartphones and other smart devices provide direct accessibility and connectiveness in wireless ways with very few limits. But although we tend to take these technological breakthroughs relating to connective devices, such as cellular networks, mobile connectivity, Internet access, Wi-Fi and Bluetooth, for granted and as a natural part of our everyday operations, it still continues to astonish me how such a tiny device in size has so much wireless power that it has made our world seem so incredibly small - everything is just a connection and a click away.

The reason why our smartphones and other connective devices work the same everywhere and all around the world is standards. A standard is "a document that sets out requirements for a specific item, material, component, system or service, or describes in details a particular method or procedure".[7] In the information and communications technology (ICT) industry, there are many different telecommunications standards such as the standard networks of 2G, 3G, 4G, and Wi-Fi. Hence, standards ensure the interconnected and interoperable world of networks and connective devices to function; without such standards and standardized patented technology implemented in the devices, there would not be universally working connective devices like smartphones. Standard setting organizations, such as the European Telecommunications Standards Institute (ETSI)[8] and the International Telecommunication Union (ITU)[9], are the leading actors in the industry and generally set the standards that typically become globally used. In fact, one could argue that the telecommunications industry revolves around standards, for example, ETSI had over 50 000 published standards in 2020[10]. The specifications of a standard are developed by the representatives of the industry in the standardization organizations and, as a result, technological solutions that comply with the

[7] 'What is a European Standard (EN)?' (CEN CENELEC Website) <https://www.cencenelec.eu/standards/DefEN/Pages/default.aspx> accessed 5 December 2020.
[8] See: ETSI Website: <https://www.etsi.org> accessed 5 December 2020.
[9] See: ITU Website: <https://www.itu.int/en/Pages/default.aspx> accessed 5 December 2020.
[10] *ETSI* (n 8).

set standard are considered to be essential to the standard. Such technologies, on the other hand, are protected by standard essential patents.

This chapter will provide an overview of SEPs, standardization process of SSOs, and the unusual but settled practice of SEP licensing. The fair, reasonable and non-discriminatory terms are explained, particularly by covering the economic and legal approaches and the different theoretical considerations and interpretations relating to such terms, and the question of why FRAND commitment is surrounded by controversy and has resulted in heated debate among academics is also considered. Hence, this chapter will unveil but also analyze and construe the challenging nature of FRAND in theory.

3.1 From Patents to Standard Essential Patents

Patent protection is granted to any invention in all fields of technology for a limited period of 20 years if the invention is novel, involves an inventive step and is susceptible of industrial application. Patents are useful and valuable tools for many companies because they protect their inventions but also grant the companies an exclusive right to prohibit others from manufacturing, using, marketing or selling products that infringe a registered patent. In return for such a temporary monopolistic position, the patent holder must disclose the details and technical information of the invention in the patent application which becomes publicly available once it is published. Hence, patents provide many benefits to companies compared to other alternatives such as publishing the invention or keeping it just secret; patents limit competition, create value and enable growth, protect against possible intellectual property theft, and provide an opportunity to monetize the invention through licensing or divestment. However, particularly in the telecommunications industry, companies aim to create inventions and technical solutions that are essential to a *de jure* standard set and approved by SSOs because such inventions guarantee the interoperability and compliance of products. Thus, a patented invention that is declared to be necessary to implement a standard is granted an SEP, that is, a patent that protects technology essential to a standard. In fact, an SEP can become a very valuable asset for its holder.

SSOs are entities that engage in the development and setting of standards in an open environment. The standard-making process is similar across SSOs; meetings, discussions and debates as well as written submissions and proposals take place among experts of the industry from different companies and institutions in technical committees to work on a standard and to choose which technical contributions are included into a standard.[11] Consequently, technical solutions that are essential for use in a standard are selected. The selection process

[11] OECD, *Intellectual Property and Standard Setting – Background Note by the Secretariat* (An Issue Paper by Directorate for Financial and Enterprise Affairs, Competition Committee, 2014) 8-9.

is open, transparent and consensus-based and the selection itself is purely based on technical merits.[12] The whole process may take months and, in some cases, even years. Typically a company can propose its patented technology to be included in the standard and the SSO decides whether the proposed technological contribution is in fact essential to the standard and thereupon granted an SEP. ETSI and ITU are one of the main SSOs in the ICT industry and both organizations have more than 900 members that consist of companies, universities and other organizations operating in the industry.[13] Having an SSO membership can be very beneficial for such actors in the industry because it provides an opportunity to be a part of the standard-setting community and gain influence and decision power over standardization through participation in the technical groups involved in standard-making.[14]

There are many benefits in standardization such as economic efficiency, facilitation of innovation, and consumers' trust in standardized products and services. It is rather clear that all parties involved in standard-setting, regardless of whether they are inventors or adopters of the standard, ultimately support the most efficient standard because it generates social benefits and maximizes welfare.[15] Particularly in the telecommunications industry, connectivity and interoperability standards are vital because they allow products to interoperate and comply with networks, and the most high-performing connectivity is guaranteed by having the most efficient standards as well as technical contributions to the standards in place. Returning to the powerful example of a smartphone, a high number of SEP protected technologies are usually implemented in the 4G/LTE standard-compliant device to ensure interoperability and connectivity – the end result being a phone interacting with a network. Thus, the proprietary technological solution that has been declared essential to the implementation of a standard needs to be available for the manufacturer of a smart device in order to manufacture a standard-compliant product, otherwise the end result would be a device that is the opposite of smart. So, it is undeniable that standards and standardization yield many benefits to the society when they are accessible by those who exploit and implement the standardized technology into their products.

However, once a standard is set and widely accepted in the industry, it can provide the SEP holder substantial market power over other industry players. On the one hand, the market becomes tied on the specific standard which means that the standard is adopted in the

[12] Fredrik Nilsson, 'An appropriate base to determine a fair return on investment: a legal and economic perspective on FRAND', in Eleonora Rosati, Stefano Barazza, et al. (eds), *Journal of Intellectual Property Law & Practice* (Oxford University Press 2018, Volume 12 Issue 5) 414, 414-415.
[13] *ETSI* (n 8) and *ITU* (n 9).
[14] See: 'Member benefits' (ETSI Website) <https://www.etsi.org/membership/member-benefits> accessed 19 December 2020.
[15] See: Daniel F. Spulber, 'Standard Setting Organizations and Standard Essential Patents: Voting and Markets' (2018) 129 The Economic Journal 1477-1509.

industry and, on the other hand, patents essentially grant their owners an exclusive right against others from exploiting their protected innovations which, in this case, are essential to implement the standard. Thus, if the SEP holders would have an exclusive right for the standardized technologies, the implementers would not be able to legally produce products complying with the standards. Therefore, SEPs have been a focus of competition policy and, in order to address and alleviate the competition concerns, SSOs have adopted intellectual property rights policies that require SEP holders to commit to fair, reasonable and non-discriminatory licensing terms.

3.2 Licensing Standard Essential Patents on FRAND Terms

One of the most important incentives for companies with patents operating in the ICT industry to invest in industry-wide standardization and research and development relating to such standards is the prospect of licensing patents that are declared as essential to the standards.[16] The reason lies behind the nature and characteristics of innovation; "a large number of patents are usually incorporated in a single product ("complementary" innovation) and new ideas are developed in an incremental way, building on existing technology ("cumulative" innovation)".[17] Thus, the prospects of licensing and generating economic profits in the ICT industry are wide. However, the exclusive right given by an SEP on the holder "gives companies the potential to behave in anti-competitive ways, for example by "holding up" users after the adoption of the standard by excluding competitors from the market, extracting excessive royalty fees, setting cross-license terms which the licensee would not otherwise agree to, or forcing the licensee to give up their invalidity or non-infringement claims against SEPs".[18] This type of anti-competitive behavior defeats the objective of standards, that is, open market access and deploying technologies world-wide. Hence, to resolve these anti-competitive effects, most SSOs have adopted intellectual property policies that require patent owners to license their SEPs on FRAND licensing commitment.

Today FRAND licensing terms are a prevalent practice in SEP licensing and membership of an SSO generally implies willingness to accept FRAND terms. Committing to FRAND means essentially that the SEP licensing agreements must be 'fair', 'reasonable' and 'non-discriminatory'. For instance, Clause 6.1 of the ETSI Intellectual Property Rights Policy[19] states that the owner of essential patent relating to a particular standard must be prepared to grant irrevocable licenses on FRAND terms and conditions. The purpose of FRAND commitments

[16] Chryssoula Pentheroudakis and Justus A. Baron, *Licensing Terms of Standard Essential Patents – A Comprehensive Analysis of Cases* (European Commission, JRC Science for Policy Report, 2017) 10.
[17] *OECD* (n 11) 5.
[18] European Commission, *Competition policy brief – Standard-essential patents* (Discussion paper by the Competition Directorate-General of the European Commission, Issue 8, 2014) 3.
[19] Annex 6: ETSI Intellectual Property Rights Policy, Rules of Procedure, ETSI Directives 2020.

is to strike a balance between the licensor and licensee; providing protection to the licensee from the abuse of dominant position while ensuring that the SEP holder receives an adequate compensation for its investment in research and development to standards and standardized technology.[20] To put it simply, FRAND guarantees that the licensing agreements are not unfair, unreasonable or discriminatory which means that the market participants can trust that the royalties charged on SEPs are not excessive and that the licenses will not be withheld. A contractual FRAND commitment towards SSOs could be compared with compulsory licensing of patents because the end result in both is very similar: "each licensing commitment covers a defined set of patents, requires the patent holder to grant licenses to some defined community of users, and establishes high-level criteria for those licenses".[21] However, committing to FRAND terms is actually voluntary; "SSOs generally do not force their member [...] to grant a license for their patents" and "[t]he ETSI IPR [P]olicy, for instance, does not contain any obligation to license essential [patents]".[22]

If the owner of a patent refuses to commit to FRAND terms prior to the publication of a standard, the automatic result of such refusal is not necessarily that the patent is excluded from the standard. Clause 8.1 of the ETSI IPR Policy states that the General Assembly will examine whether a viable alternative technology is available for a specific standard in cases where the holder of an SEP is not prepared to license the patent in accordance with FRAND. The Article further continues that, if alternative technology does not exist, the Director-General of ETSI requests the patent owner to reconsider its position. The owner can still hold its position and refuse to license which will lead into written explanations between ETSI and the patent owner. Clause 8.2 of the Policy, however, states that in a similar situation of persistent refusal by the patent owner but after the publication of the standard, the General Assembly can vote on modifying the standard so that the patent in question is no longer essential to the standard. If the General Assembly's vote does not succeed, then the ETSI Counsellors are consulted in order to find a solution. The General Assembly requesting the European Commission to asses further appropriate actions, including non-recognition of the standard in question, is the last resort included in the Clause 8.2. Thus, ETSI IPR Policy contains only a requirement for the patent holders to assure that they grant FRAND licenses but commitment to FRAND terms is not obligatory.

[20] *Pentheroudakis* (n 16) 18.
[21] Jorge L. Contreras, 'A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historical Lens' (2015) 80 Antitrust Law Journal 39, 45-46.
[22] Damien Geradin and Miguel Rato, 'Can Standard-Setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-Up, Royalty Stacking and the Meaning of FRAND' (2006) 8 <https://ssrn.com/abstract=946792> accessed 1 January 2021.

Interestingly, the licensing negotiations between the SEP holder and the implementer are conducted outside the SSOs and, for instance, Clause 4.1. of the ETSI Guide on IPRs[23] clarifies that "[s]pecific licensing terms and negotiations are commercial issues between the companies and shall not be addressed within ETSI". Thus, SEP licensing is a matter of commerce and does not belong to the technical standard-setting environment. Furthermore, although a subject of debate, "the common practice when licensing SEPs to implementers has been to give access to all stakeholders interested in being part of the market, by granting licenses to companies at the final stage of the supply chain, i.e. at the level of the end device producers"[24]. A rather simple example of this "access-to-all" SEP licensing is a car manufacturer manufacturing connected vehicles that implement SEP protected technology in order to have Internet connection. In this case, the manufacturer of the component, for example, a SIM card which contains the protected technology, is not the licensee of the SEP but the licensee is the car manufacturer as the end device producer. Hence, the car manufacturer has to obtain a FRAND license from the SEP holder in order to use the connectivity technology in its vehicles. Access-to-all licensing has been justified by few practical implications on SEP holders such as preventing patent exhaustion, receiving a fair reward, contributing to open standards, favoring worldwide portfolio licensing, and decreasing litigation.[25] In addition, "the current legal framework is tailored to the [access-to-all] system".[26]

A FRAND commitment plays an intrinsic role in SEP licensing and therefore it is important to understand more in-depth the different theoretical considerations surrounding it. Hence, some of the general economic and legal approaches of FRAND will be addressed next.

3.2.1 Economic Approaches of FRAND

The economic approaches of FRAND licensing terms concentrate on the theoretical economic functions of FRAND: first, the incentives to contribute to the standard development, and second, the market failures and the resulting anti-competitive behavior.[27] The first theoretical economic function, the incentives to contribute to the standard development, refers to the incentives to develop standard-essential technology as well as to participate in standard-

[23] ETSI Guide on Intellectual Property Rights, Version adopted by Board#94 (19 September 2013).
[24] Juan Martinez, 'FRAND as Access to All versus License to All', in Eleonora Rosati, Stefano Barazza, et al. (eds), *Journal of Intellectual Property Law & Practice* (Oxford University Press 2019, Volume 14 Issue 8) 642, 643. There has been a policy debate on whether SEPs should be licensed according to the practice of "access-to-all" or "license-to-all". Access-to-all means that the SEP holders can grant licenses only to the end device producer as long as other industry actors are provided also access whereas license-to-all means that the SEP holders are obligated to offer licenses to all actors in the value chain that request such license.
[25] *Ibid,* 648-651.
[26] *Ibid,* 651 and 643-647.
[27] *Pentheroudakis* (n 16) 21.

setting process in SSOs.[28] Incentivizing and inducing research and development in the field of standardization is one of the important effects of SEPs, mostly because "the inclusion of a patented invention in standard is likely to generate additional demand for licenses to this patent" and "the remuneration of SEPs – even when it is regulated by FRAND terms – appears to be attractive".[29] In fact, Stasik establishes well that there is a considerable licensing potential and resale value in SEPs which make them very attractive to the players in the telecommunications industry.[30] Thus, FRAND licensing practice and consequently the fair, reasonable and non-discriminatory royalty rates do not necessarily nor automatically have a negative impact the economic return of SEPs and the existing economic potential appears to push the industry participants to develop standardized technology as well as to participate in standard-setting process. Therefore, in theory, FRAND terms should be and remain attractive for the patent holders because the terms determine their willingness to contribute to standard setting and development.

The second theoretical economic function of FRAND is the possible market failures and the resulting anti-competitive behavior in SEP licensing: particularly the hold-up and hold-out problems caused by the *ex post* licensing negotiations as well as the royalty stacking issue resulting from the fragmentation of patent ownership.[31] One of the characteristics of the standardized industry is that often the licensing of SEPs takes place *ex post*, meaning that the implementer has already implemented the protected technology in its product before the licensing negotiations have begun. The possible consequence of such *ex post* licensing is a shift in bargaining power in favor of the patent holder because the implementer has tied itself to a specific standard by implementing the SEP protected invention in its products. Such conduct infringes the legal rights of the patent holder and, as a result, the implementer is ultimately forced to obtain a license from the patent holder. There is no precise definition for the concept of patent hold-up but, in essence, it means "any mechanism by which a patentee can extract a royalty that is higher than a fair benchmark royalty".[32] Due to the *ex post* licensing negotiations and the shift in bargaining power, patent hold-up is an evident issue of SEP licensing but addressed by FRAND commitment. On the other hand, patent enforcement can be rather difficult in practice and the actual threat of legal action and injunction by the patent

[28] *Ibid.*
[29] *Ibid,* 22.
[30] Eric Stasik, 'Royalty Rates and Licensing Strategies for Essential Patents on LTE (4G) Telecommunication Standards' (2010) les Nouvelles – Journal of the Licensing Executives Society 114, 114-119.
[31] *Pentheroudakis* (n 16) 24.
[32] Norman V. Siebrasse, 'Holdup, Holdout, and Royalty Stacking; A Review of the Literature', in C. Bradford Biddle, Jorge L. Contreras, et al (eds.), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge University Press 2019) 239, 254.

holder can be low; therefore, the implementer might attempt to ignore a patent or to pay an unfairly low royalty – this, on the other hand, is the issue of patent hold-out.[33]

The other characteristic of the standardized industry is that the set standards are encumbered by several patents belonging to several patent owners. Thus, fragmented patent ownership is common in the industry and the final product, such as a smartphone, is a good example of the fragmentation – the standard-compliant device implements a number of standardized technologies that are a subject of patent fragmentation. As Geradin and Rato well explain, royalty stacking refers to a situation where a final product "is comprised of multiple complementary components, each of which is necessary for production [of a standard-compliant device] and each of which is covered by patents held by separate firms" and, as the implementer typically needs to acquire a license from each patent holder, "the aggregate royalty fees for licensing all of the required pieces can, it is sometimes suggested, add up to a very large amount".[34] Therefore, it has been recommended that addressing the risk of royalty stacking should be also one of the objectives of FRAND; "a FRAND licensing policy must guarantee the overall reasonableness of the aggregate royalty burden in addition to the reasonableness of single royalty requests for individual patents".[35]

3.2.2 Legal Approaches of FRAND

Before all else, the statutory basis should be clarified. Firstly, SEP licensing on FRAND terms is essentially a contractual issue which means that the role of legislation is less relevant due to the principle of freedom of contract – the primary source of "law" is the contract itself and not legislation. Secondly, patent law does not regulate the practice of patent licensing but provides the patent owner an exclusive right and a right to remedies against patent infringement, such as compensation and injunction. However, it is an area of patent law that has not been harmonized in the EU yet. An exception is the Unified Patent Court (UPC) Agreement[36] which harmonizes substantive patent law relating to the scope of the exclusive right and remedies available for an infringement as well as sets up a specialized patent court in Europe that has exclusive jurisdiction to decide on the validity and infringement of both Unitary Patents and European patents, but the unitary patent system has not entered into force yet since Germany has postponed the ratification of the UPC Agreement. Hence, when it comes to legislative aspect of SEP licensing on FRAND terms, the emphasis is on the nature of FRAND as a legal principle with multiple functions from the point of view of contract law, competition and antitrust law, and patent law – but it is not a legal rule or law per se.

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[33] *Ibid,* 284.
[34] *Geradin* (n 22) 23.
[35] *Pentheroudakis* (n 16) 32.
[36] Agreement on a Unified Patent Court, OJ C 175/1, 20.06.2013.

The contract law approach to FRAND is that the commitment to FRAND terms is considered to be a voluntary contract between the SEP owner and the respective SSO. As described earlier, typically FRAND terms are a licensing requirement stated in the IPR policies of SSOs and the holder of an SEP voluntarily commits and assures to grant fair, reasonable and non-discriminatory licenses and to waive its exclusive right to refuse to offer a license. However, such contractual duties do not ensure that a FRAND licensing agreement between the patent owner and the implementer is in fact formed in all cases; the licensing negotiations are still a matter of commerce and the negotiations can be unsuccessful. The prevailing legal approach to the SEPs encumbered by FRAND terms, especially in the United States, is that the enforcement of FRAND is based on its contractual nature; "[c]ourts have recognized that an SEP holder's voluntary commitment to license its SEPs on FRAND terms constitutes a binding contract with the SSO" and consequently "[t]he SEP holder and the SSO are parties to the contract, whereas the implementer of the standard (the licensee) is a third-party beneficiary".[37] This type of contract law approach to FRAND indicates that the implementer can seek to enforce the SEP holder's commitment to FRAND as a third-party beneficiary. Furthermore, "the binding effect of the FRAND commitment as a contractual agreement and a preliminary form of a concluded licensing agreement resonates with European scholars as well as courts" but ultimately "[a]ccepting the contractual basis of a FRAND commitment depends on the various Civil Law and Common Law traditions of contract law and enforcement – the governing law will not be uniform".[38] Nevertheless, it should be noted that the SSO policies are legally significant only if they are enforceable.

From the point of view of competition and antitrust law, the fundamental purpose of FRAND is to address and prevent anticompetitive behavior and exploitative abuse by the SEP holders. Competition policy brief from 2014 by the Competition Directorate-General of the European Commission points out that standard-setting and standardization agreements are generally subject to Article 101 of the Treaty on the Functioning of the European Union (TFEU)[39] because standardization involves agreements between competing undertakings; however, such agreements are usually permitted and compatible with the internal market because of their positive economic effects.[40] Thus, standardization creates a legal cartel which promotes technical progress as well as results in consumer benefits. A more notable competition law concern is the significant market power conferred by SEPs on their holders and the potential

[37] J. Gregory Sidak, 'The Meaning of FRAND, Part II: Injunctions' (2015) 11 Journal of Competition Law & Economics 201, 210.
[38] *Pentheroudakis* (n 16) 33-34. For example, the enforcement of a contract by a third party is allowed under French law in cases where the contract grants a benefit to the third party. The UK courts have also taken the same approach that the enforcement of FRAND is a matter of contract law whereas the German courts have aligned that the enforcement should be rather based on competition law.
[39] Consolidated version of the Treaty on the Functioning of the European Union, OJ C 326, 26.10.2012.
[40] *European Commission* (n 18) 3.

of anti-competitive behavior and exploitative abuse by the patent owners. In addition to patent hold-up and royalty stacking, setting exploitative and unfair cross-license terms as well as forcing to give up invalidity or non-infringement claims against SEPs are other common SEP licensing issues from the competition law perspective. Such behavior by the SEP holder can be considered as an abuse of a dominant position which is prohibited under Article 102 of TFEU. Hence, the commitment to FRAND terms by the patent owner is inherently intended to alleviate and address such competition concerns. The Commission has also identified another significant issue from the angle of competition and anti-trust law, that is, injunctive relief, which could lead into opportunistic behavior.[41] The debate surrounding a FRAND commitment and injunctions will be addressed later in greater detail in this chapter.

When it comes to SEPs and FRAND terms, patent law interacts closely with both contract law and competition law in order to have feasible solutions to patent problems; this type of complementarity of the different legal frameworks "is particularly evident in the area of patent licensing and supports the transition to a more balanced, more efficient system".[42] Thus, a contractual commitment to FRAND and its nature of addressing competition law issues imposes certain limits on the patents as exclusive rights and, in particular, on the licensing practices and the SEP licensing agreements between the patent holder and the implementer. Moreover, some scholars support the view that a FRAND commitment is an enforceable contract but is fundamentally tied to the treatment of intellectual property, a principle at the intersection of property and contract: "[t]he FRAND commitment can either be characterized as a contract with property traits or as property with contract traits".[43] Patent law has also significance in the FRAND licensing negotiations because the negotiations of FRAND terms are usually steered by case law relating to patents and available patent infringement remedies; "[p]arties bargain over licensing terms "in the shadow of the law"".[44] Furthermore, from the point of view of SEP enforcement and litigation, FRAND commitment is perceived as "a defensive procedural tool in the course of patent infringement proceedings" which can be very effective when used successfully.[45]

3.3 Interpretation(s) of the Ambiguous FRAND Terms

All SEP licensing negotiations are commercial matters between the patent holder and the implementer and, therefore, handled outside the SSOs. This means in practice that "[t]he terms and conditions of any license arising from a FRAND commitment are the result of a

[41] *Ibid,* 4.
[42] *Pentheroudakis* (n 16) 37.
[43] Jay P. Kesan and Carol M. Hayes, 'FRAND's Forever: Standards, Patent Transfers, and Licensing Commitments' (2014) 89 Indiana Law Journal 231, 268-294.
[44] *Sidak* (n 37) 239.
[45] *Pentheroudakis* (n 16) 39.

normal process of commercial negotiation between the licensor and the licensee".[46] As the rationale behind FRAND commitment is to secure the availability of technological solutions essential to a standard as well as to ensure that the patent holders receive appropriate rewards for their innovations and investments in research and development in standards, Geradin and Rato point out well that "[t]his commercial, market-driven negotiation of license terms is not only what FRAND suggests but is also justified from an economic perspective, as it supports dynamic competition and provides incentive to innovate".[47] Thus, FRAND has an inherent role in the licensing negotiations between the patent holder and the implementer. However, although the SEP licensing agreements are expected to be fair, reasonable and non-discriminatory, the ETSI IPR Policy and other SSO policies do not define what FRAND means nor specify an exact FRAND licensing result; leaving an ambiguous concept of FRAND. Furthermore, as licensing is a matter outside the environment of standard-setting, the organizations do not have arbitration procedures for disputes arising from FRAND. The consequence of the said is that the absence of a fixed meaning leaves the interpretation of FRAND terms to the contracting parties of the licensing agreements and, in the case of disagreement, to the courts.

Usually the SEP licensing negotiations concentrate on the financial terms of the licenses and, therefore, FRAND terms are considered to mainly refer to royalty rates, but there is no reason why the parties could not require other terms of the agreement to reflect FRAND as well. Many academics, however, criticize the unclear meaning of FRAND and the lacking efforts by the SSOs to clarify the scope and nature of the concept. Lemley argues that such licensing terms are reasonable "[b]ut without some idea of what those terms are, [FRAND] licensing loses much of its meaning" because the undefined terms do not solve or specify what the royalty fees should be.[48] Similarly Contreras points out that the lack of certainty resulting from the vagueness of FRAND has been a common complaint because FRAND commitments, it is argued, offer very little useful guidance for the parties and may result in opportunistic behavior by the patent holders because meaningful limitations for licensing does not exist.[49] Contreras explains that "[w]hen parties cannot agree on license terms, no license is granted and any product that conforms to a standard is likely to infringe the patent holder's SEPs" and "[t]he parties are thus left in a difficult and ambiguous situation which has led to a vigorous

[46] *Geradin* (n 22) 9-10.
[47] *Ibid.*
[48] Mark A. Lemley, 'Intellectual Property Rights and Standard-Setting Organizations' (2002) 90 California Law Review 1889, 1964-1966.
[49] *Contreras* (n 6) 52.

debate among industry, government, and academia regarding the scope and contour of FRAND obligations".[50]

Despite the criticism and complaints, many scholars also support the undefined concept of FRAND. Geradin and Rato explain that FRAND should not be viewed as a shortcoming; "[m]uch 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".[51] Geradin takes the same approach to the undefined FRAND terms: "[i]n the case of the FRAND commitment, incompleteness is not only unavoidable but desirable" because "[p]rescribing in every detail what FRAND means, and thus what SEP holders would have to commit to in the abstract, would be inefficient, as it would restrict licensing flexibility, which is highly desirable given the relationship-specific nature of licensing negotiations".[52] Thus, the supporters of the open concept of FRAND see the licensing commitment rather as a flexible principle of negotiations and a feature of business life whereas the criticism stems from the possible uncertain and ambiguous situations between the patent holder and the implementer when it comes to interpretation of FRAND. Regardless of such back-and-forth debate about the undefined meaning of FRAND terms, Contreras reminds that "a consistent, practical, and readily enforceable definition of FRAND has proven difficult to achieve"[53].

In order to grasp where FRAND stands, the prevailing but strongly debated interpretations and understandings of the meaning of FRAND terms will be assessed next. Hence, the different elements of FRAND and the obligations and constraints they impose on all SEP licensing negotiations as well as the licensing agreements between the patent holders and the implementers are examined more in-depth. Case law relating to FRAND will not, however, be addressed since chapter 4 presents a study of landmark SEP cases and how European and the US courts and competition authorities have interpreted and defined FRAND in the evolving case law.

3.3.1 Duty to Offer License and Negotiate in Good Faith

A prevalent legal view of FRAND commitment is that it "creates an obligation for the SEP owner to offer every potential implementer the right to use the patented technology on

[50] *Ibid,* 53.
[51] *Geradin* (n 22) 11.
[52] Damien Geradin, 'The Meaning of "Fair and Reasonable" in the Context of Third-Party Determination of FRAND Terms' (2014) 21 George Mason Law Review 919, 930.
[53] *Contreras* (n 6), 51.

reasonable conditions that are negotiated in good faith".[54] As the patent holder's voluntary commitment to FRAND is not a duty to license but a duty to offer for a FRAND license and act in a certain manner, it is generally interpreted as binding the patent holder not to refuse to license to a potential implementer. Thus, the patent holder's promise to offer to license SEPs on FRAND terms promotes a wide adoption of standards by preventing the patent holder from limiting the implementation of standardized technology, which is one of the objectives of FRAND terms. As the duty of good faith is a general principle of contract law, FRAND is also perceived as a commitment to negotiate in good faith. For instance, Ferro explains that under French law "good faith implies, for example, that the legitimate expectations of the potential licensee must be respected"; thus, "[t]he irrevocable preparedness to grant FRAND licenses expressed in the declaration raises the legitimate expectation that the declarant will not refuse to negotiate".[55] Similarly Geradin and Rato clarify that a commitment to FRAND "entails a promise by the [patent] 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".[56]

The obligation to negotiate in good faith, however, applies to the implementer as well; "[i]t would be anomalous, to say the least, to apply an asymmetric rule whereby the SEP holder was obliged to negotiate a bilateral license agreement in good faith while the counterparty to the negotiation – the implementer – was excused from any reciprocal duty".[57] Thus, the implementer is expected to negotiate the SEP licensing agreement in good faith in the same manner as the SEP holder. This position was affirmed in the famous CJEU decision *Huawei v. ZTE*[58], a case that is covered more in-depth in chapter 4.

3.3.2 Fairness and Reasonableness

It should be kept in mind that the terms 'fair', 'reasonable' and 'non-discriminatory' are considered to mainly refer to royalty rates as the licensing negotiations usually concentrate on the financial terms of the SEP licenses. The commitment to FRAND does not only obligate to offer license and negotiate in good faith but also sets constraints on licensing conditions. Such licensing conditions are not "freely" determined by an SEP holder and therefore the SEP owner may not, for example, set unfair or unreasonable royalties. Geradin and Rato note that the

[54] *Pentheroudakis* (n 16) 13.
[55] Frodo Ferro, 'The Nature of FRAND Commitments Under French Contract and Property Law' in Eleonora Rosati, Stefano Barazza, et al. (eds), *Journal of Intellectual Property Law & Practice* (Oxford University Press 2018, Volume 13, Issue 12) 980, 986.
[56] *Geradin* (n 22) 11.
[57] *Sidak* (n 37) 217.
[58] *Huawei v ZTE* (n 2).

terms 'fair' and 'reasonable' have received much attention by legal and economic academics but "[m]ost of the literature does not actually distinguish between the two terms, in part due to the fact that the term 'fair' is specific to the EU context"; SSOs based in the United States usually refer to the concept of RAND, not FRAND.[59] For that reason, the terms 'fair' and 'reasonable' will be addressed together in this chapter as well. Sidak explains that the objective of fairness and reasonableness is to promote participation by both, the patent holder as well as the implementer, in the standard: a fair and reasonable royalty "adequately rewards the SEP holder for its investment in standard setting and does not deny the implementer access to the standard".[60]

Many academics have suggested that a fair and reasonable royalty is the royalty *ex ante* competition, that is, the royalty that the SEP holder could have obtained before the standard was set, because the goal of FRAND is to prevent abuses of market power enabled by standardization.[61] Chapter 4 will elaborate how this has been a prominent view of US courts; well-known judgements such as *Microsoft v. Motorola*[62] and *Apple v. Motorola*[63] have brought forth notions of *ex ante* hypothetical negotiation and *ex ante* incremental value of the patent. However, many disagree with this *ex ante* position due to the fact that it does not necessarily take into account the prerogative of the patent holder to be rewarded for its investments. Geradin and Rato view the fair and reasonable royalty as the question of how valuable the SEP is to others and what the market is willing to pay for it.[64] Similarly Sidak asserts that the patent holder will have the incentive to invest in research and development in standards if the patent holder's reward is "based on value that the SEP contributes to the standard and to the downstream product implementing the standard".[65]

From the implementer's perspective, on the other hand, there are two conditions that define a fair and reasonable royalty: "[f]irst, a FRAND royalty must not be so high as to deny the implementer access to the standard" and "[s]econd, an individual FRAND royalty should not be excessive – either individually or in combination with the other royalties required to implement the standard without infringing any SEPs".[66] Sidak describes a royalty that denies the access and contributes to an unsustainable aggregate royalty burden as "shutdown royalty"

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[59] *Geradin* (n 22) 11.
[60] J. Gregory Sidak, 'The Meaning of FRAND, Part I: Royalties' (2013) 9 Journal of Competition Law & Economics 931, 994.
[61] Daniel G. Swanson and William J. Baumol, 'Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power' (2005) 73 Antitrust Law Journal 1, 5.
[62] *Microsoft v. Motorola* (n 1).
[63] *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901 (N.D. Ill. 2012).
[64] *Geradin* (n 22) 12.
[65] *Sidak* (n 60) 994.
[66] *Ibid,* 994-995.

because it deters the implementer to produce a standard-compliant product; in its simplicity, a royalty is too high if it exceeds the implementer's profit margin.[67]

The terms 'fair' and 'reasonable' clearly require balancing the interests and considerations of both the SEP holder and the implementer in order to find an equilibrium royalty that is fair and reasonable for both parties of the licensing agreement. The amount of the royalty should be low enough that it prevents the issue of patent hold-up and ensures the implementer to access to the standard but also at the same time high enough that it adequately compensates the patent holder for investing in the standard-setting activities. However, FRAND terms, particularly the assumption of fairness and reasonableness of the licensing terms, do not set any specific or concrete definitions or instructions on the actual amount or level of royalties. Hence, the interpretation and agreement of what constitutes a fair and reasonable royalty for both parties is left for the patent holder and the implement to negotiate and decide. Therefore, one could argue that fair and reasonable licensing terms and particularly royalty rates are "determined through fair, bilateral negotiations between individual [patent] owner and standard-adopter in accordance with the market conditions prevailing at the time of such negotiations".[68] Furthermore, it should be kept in mind that a commitment to FRAND is not a promise by the patent holder to license its SEP to all implementers if they are not willing to pay the fair and reasonable compensation for the implementation of the SEP.

3.3.3 Non-Discrimination

Many scholars have indicated that, compared to the elements of 'fair' and 'reasonable', the last commitment of FRAND, that is, 'non-discriminatory', is generally easier to interpret and has been less subject of debate among academics.[69] The reason partly being that non-discrimination refers to "a comparison between *observables* – namely, the actual terms and conditions offered to one licensee compared to the actual terms and conditions offered to another licensee", whereas fairness and reasonableness refer more to comparisons between the offered terms and the *ex ante* negotiation terms.[70] If the term 'non-discriminatory' is interpreted strictly, it would not permit any level of discrimination, resulting in homogenous terms to all implementers. However, when taking into consideration the different objectives of FRAND, this type of interpretation is clearly not desirable. Geradin explains well that "non-discrimination does not mean that licensing terms should be identical for all licensees, as such an interpretation would ignore economic realities".[71] Firstly, identical licensing terms would

[67] *Ibid,* 995.
[68] *Geradin* (n 22) 12.
[69] *Geradin* (n 52) 927-928.
[70] *OECD* (n 11) 22.
[71] *Geradin* (n 52) 928.

create "an internal conflict" with the term 'reasonable' as reasonableness is usually tied to the value of the patent to the implementer and such valuation often differs among potential implementers.[72] Secondly, identical licensing terms could be an obstacle for promoting greater use of the standard by preventing the SEP holder's chance to offer of economically reasonable solutions, such as discounts, for high output implementers.[73]

There seems to be somewhat a consensus among academics that, in the case of SEP licensing, non-discrimination should be interpreted as "uniform treatment for similarly situated licensees", an interpretation assessed in greater detail by Gilbert.[74] Carlton and Shampine further build on Gilbert's work and provide two sensible but alternative definitions for the concept of "similarly situated": licensees are considered as similarly situated "if *ex ante* they expect to obtain the same incremental value from the patented technology compared to the next best alternative available to be incorporated into the standard" or if they use "a common component incorporating the patent".[75] However, Geradin notes that although the licensees may appear as "similarly situated", there will still always be some differences in the offered licensing terms because, in addition to the level of fees, the terms can also cover the volume of licensed products, scope of license, exhaustion of patent rights, cross-licenses, possible product purchases, the formation of a business relationship or cooperation, or other similar aspects which can all differ depending on the case.[76] Therefore, the terms might not be the exact same for similarly situated licensees either. Nevertheless, grasping the term 'non-discriminatory' seems to be easier than 'fair' and 'reasonable' but the interpretation itself still raises many practical issues since too strict interpretation hampers economic efficiency and use of standards whereas too wide interpretation enables strategic and anti-competitive behavior.

3.3.4 Right to Seek Injunctive Relief

There have been arguments that the patent holder's commitment to FRAND terms should indicate the waiver of its right to seek injunctive relief in SEP infringement cases – otherwise an effective legal remedy that may be sought from the courts to demand the infringer to either stop its infringing conduct or require the infringer to act in certain way. The issue of seeking injunctive relief is particularly relevant in the case of SEPs because often the implementer has already implemented the protected technology in its products before obtaining a license from

[72] *OECD* (n 11) 22.
[73] *Ibid*.
[74] Richard J. Gilbert, 'Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations' (2011) 77 Antitrust Law Journal 855, 876.
[75] Dennis W. Carlton and Allan L. Shampine, 'An Economic Interpretation of FRAND' (2013) 9 Journal of Competition Law & Economics 531, 546.
[76] *Geradin* (n 52) 928.

the patent owner and an injunction issued by a court would essentially force the implementer to pull its products from the market. Some academics claim that the possibility to seek injunction enables the SEP holder to act in anti-competitive manner, for example, by using injunctive relief to engage in patent hold-up. Lemley and Shapiro argue that even "the threat of an injunction can enable a patent holder to negotiate royalties far in excess of the patent holder's true economic contribution".[77] Furthermore, Dolmans argues that the patent owners who have committed to FRAND licensing should refrain from requesting injunctive relief against implementers because an injunction would be inconsistent with their commitment as well as the principle of equality of arms.[78] Similarly other scholars have claimed that a FRAND commitment represents a contractual waiver – "an irrevocable waiver of injunctive relief and other extraordinary remedies" is "the core meaning of the RAND promise" because it ensures the implementer's long-term access to the technology essential to a standard.[79]

However, Sidak argues that "a detailed analysis of the contractual provisions of a FRAND commitment does not support this interpretation" and that "there is no indication that a FRAND contract provides either an explicit or an implicit waiver of the right to seek an injunction".[80] In fact, the IPR policies of SSOs typically do not prohibit to seek an injunctive relief in cases of infringement and, for example, the ETSI IPR Policy is silent on the matter. The patent owner's right to seek injunctive relief in the case of a patent infringement is recognized in the international law as well as the European Union law and the United States law. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)[81] states that the laws of Members must permit effective action against any act of infringement of intellectual property rights[82] which includes permanent injunctions[83] and interlocutory injunctions[84]. Similarly, the IPR Enforcement Directive[85] states that the EU Member States must ensure that, in the cases of intellectual property right infringement, the judicial authorities may issue permanent injunctions[86] or interlocutory injunctions[87].

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[77] Mark A. Lemley and Carl Shapiro, 'Patent Holdup and Royalty Stacking' (2007) 85 Texas Law Review 1991, 1993.
[78] Maurits Dolmans, 'Standards for Standards' (2002) 26 Fordham International Law Journal 163, 205.
[79] Joseph S. Miller, 'Standard Setting, Patents and Access Lock-in: RAND Licensing and the Theory of the Firm' (2007) 40 Indiana Law Review 351-395, 358 and 376.
[80] *Sidak* (n 37) 219.
[81] Agreement on Trade-Related Aspects of Intellectual Property Rights. Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization 1994.
[82] Article 41(1) of the TRIPS Agreement.
[83] Article 44(1) of the TRIPS Agreement. An order by the judicial authority to desist from an infringement of intellectual property, typically issued after a judgement of the court.
[84] Article 50(1) of the TRIPS Agreement. An order by the judicial authority to prevent an infringement of intellectual property, typically issued during the trial.
[85] Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights, OJ L 157, 30.04.2004.
[86] Article 11 of the IPR Enforcement Directive.
[87] Article 9 of the IPR Enforcement Directive.

Furthermore, the United States federal law guarantees the right to seek injunctive relief; the US Patent Act states that the courts may grant injunction to prevent the violation of any right secured by patent.[88] For these reasons, Geradin and Rato approach the interpretation of FRAND commitment with the same attitude as Sidak and claim that such a commitment cannot be perceived as "an implicit waiver to [the patent holder's] right to seek injunctive relief as recognized in the law".[89]

There are also other dissenting views on the interpretation of FRAND commitment as a waiver of injunctive relief. Some academics argue that the alleged possibility of anti-competitive behavior by the patent holder and the risks of patent hold-up are exaggerated and, in fact, the prohibition of injunctions and the absence of a threat of injunctions could rather result in the opportunistic behavior of the implementer. Geradin argues further that "the situation would be much worse if the threat of injunction disappeared from the patent holder's legal arsenal and its only available relief were an *ex post* award of damages" because "[i]n that scenario, any firm wishing to implement a standard would be invited to begin immediately using the invention without even trying to obtain a license from the [patent] owner and take its changes in court later".[90] Thus, the implementer would be able to systematically infringe SEPs for free and someday maybe end up paying only FRAND royalties determined by the court. Furthermore, a study by Langus et al. similarly discovers that the concerns of the patent holder negotiating excessive royalties from the implementer due to the availability of injunctions may not be well founded and that a "reverse hold-up" by the implementer would be probable, specifically the holder of a sufficiently weak patent would eventually be forced to accept royalty rates that are below FRAND in order to avoid time-consuming and expensive litigation.[91]

Although the legal remedy of injunctive relief has been a subject of debate among academics, the courts and competition authorities have restricted the use of injunctions on certain conditions in both Europe and the United States. Chapter 4 will address and analyze how judicial authorities have approached and justified the restriction of injunctions – particularly landmark cases such as *Huawei v. ZTE*[92] and *Apple v. Motorola*[93] are covered – and aims to assess, based on the existing case law, whether injunctive relief actually represents a significant defect of FRAND commitment.

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[88] 35 U.S.C., Part III, Chapter 29, Section 283.
[89] *Geradin* (n 22) 16.
[90] Damien Geradin, 'Reverse Hold-ups: The (Often Ignored) Risks Faced by Innovators in Standardized Areas' (2010) 15 <https://ssrn.com/abstract=1711744> accessed 27 February 2021.
[91] Gregor Langus, Vilen Lipatov, et al. 'Standard Essential Patents: Who Is Really Holding Up (and When)?' (2013) 27 <https://ssrn.com/abstract=2222592> accessed 27 February 2021.
[92] *Huawei v. ZTE* (n 2).
[93] *Apple v. Motorola* (n 63).

3.4 Royalty Rates and FRAND Terms

As already mentioned many times, FRAND terms are considered to mainly refer to royalty rates as the licensing negotiations usually concentrate on the financial terms of the SEP licenses. Thus, the absence of a fixed meaning has raised concerns on how to determine whether a royalty level offered by the SEP holder to the implementer is actually 'fair', 'reasonable' and 'non-discriminatory' – a FRAND royalty. Geradin and Rato, however, claim that the term 'FRAND royalty' is misleading and, in fact, it has no meaning at all.[94] They assert that FRAND terms cannot be determined "in a vacuum" but should be tied to the negotiation process between the patent holder and the implementer; whether a royalty complies with a FRAND commitment is a matter of "the long-established model of bilateral negotiations". Geradin and Rato argue that an SEP licensing agreement should be considered as FRAND "if its terms would be acceptable in arm's-length-negotiations". Thus, the term 'FRAND royalty' should be replaced with a more accurate description of "[r]oyalty rate established under an agreement negotiated in accordance with a FRAND commitment". Furthermore, Geradin and Rato claim that such an approach does not mean that the parties would be unable to estimate the expected royalties because there has been proof about the patent owners' willingness to engage in *ex ante* licensing activities due to a higher chance to have their technology included in a standard.[95]

I agree with Geradin and Rato for few reasons. Firstly, as there is always some variation in royalty levels, depending on the circumstances and facts of each licensing opportunity, the argument against defining the FRAND terms in a vacuum is a reasonable one. Such a definition would purport itself as too stiff and rigid to actually work in practice. Secondly, it is also undisputable that if a licensing agreement is a result of an arm's length negotiation, that is, a negotiation where both parties act independently in their own best interest and have equal bargaining power and equal access to information, the terms of the agreement would be FRAND. Thus, the interpretation of FRAND should not only consider generic hypothetical situations but the specific licensing opportunity in case as well as the negotiations between the SEP holder and the implementer and what an arm's length negotiation would be when determining the royalty level. As shortly mentioned earlier, this type of hypothetical negotiation is a concept deeply embedded in the US case law, but how the method should be used to determine fair, reasonable and non-discriminatory royalties has not always been so straightforward – a topic covered in chapter 4.

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[94] *Geradin* (n 22) 13-14.
[95] *Ibid.*

The flip side of the coin of the SEP licensing negotiations is obviously that, as the negotiations are commercial matters outside the SSOs, it is inevitable that sometimes such negotiations fail. When the parties are unable to negotiate a licensing agreement due to many issues and differing views arising during the negotiations, the disagreement eventually falls into the hands of the courts to determine whether the licensing terms reflect FRAND. Thus, in order to understand the judicial interpretation of FRAND commitment and how courts have actually determined the level of royalties, a deep dive into the evolving case law is necessary. Furthermore, as it is quite clear by now that FRAND commitment is a subject of controversy as well as heated debate among scholars due to its voluntary, commercial and contractual nature but undefined meaning and ambiguous interpretation, a question arises whether FRAND terms represent a gap in the existing system and practice of SEP licensing. Therefore, the next chapter will provide a study of landmark SEP cases in Europe and the United States assessing how courts and competition authorities have addressed these issues and interpreted FRAND terms in order to examine whether such case law provides evidence that FRAND is not (or is) an attainable and workable principle in SEP licensing activities.

4 FRAND TERMS IN THE EVOLVING CASE LAW

The touchstone of FRAND licensing negotiations is generally a situation where the manufacturer of a standard compliant product has already implemented the standardized technology in its product before acquiring a license from the SEP holder – a quite tricky situation of patent infringement. Nevertheless, as FRAND commitment is considered as a duty to offer a license and to negotiate in good faith, the patent holder is first obligated to make a notification of infringement and give the implementer the opportunity to respond and express willingness to license before the patent holder can enforce its rights and, for instance, seek an injunctive relief from the court. If the implementer responds and expresses willingness, the SEP holder must offer a license on FRAND terms and, as a consequence, both parties take part in bilateral licensing negotiations that are negotiated in good faith and ideally result in fair, reasonable and non-discriminatory license between the patent owner and the implementer. However, the SEP licensing negotiations are commercial matters outside the SSOs left in their entirety to the hands of the negotiating parties so it is clear that the negotiations are not always successful. There are many reasons why the licensing negotiations can fail but more often than not it boils down to the parties' differing views on FRAND and especially whether the royalty rate is actually fair, reasonable and non-discriminatory. If the patent holder and the implementer are unable to come to an agreement, the dispute will become a matter of the court to solve.

According to an ECSIP Consortium study carried out for the European Commission in 2014, SEPs are more likely to be litigated than non-essential patents and the frequency of litigations for SEP cases has increased considerably in the last decades.[96] Whether there is a correlation between the increase in the amount of SEP litigation cases and the controversy surrounding the interpretation of FRAND terms or not, the role of courts in interpreting, measuring and applying FRAND has been significant and even necessary. Thus, when an ambiguous legal principle that imposes certain constraints on patent licensing is "freely" negotiable between the patent holder and the potential licensee that have different interests, such precedents are much welcomed in directing the interpretation of FRAND and leading the way for future negotiations and licensing agreements. As perceived in the previous chapter, understanding the ambiguous FRAND terms and their effects on the SEP licensing agreements is not straightforward and has not only been a subject of debate among the parties of SEP licensing agreements but also scholars and other actors in the standardization industry. Although courts and competition authorities are hesitant to set a fixed meaning for FRAND or to define a

[96] European Commission, 'Patents and Standards: A Modern Framework for IPR-based standardization' (2014) ECSIP Consortium, 125.

specific FRAND licensing result for understandable reasons, case law has still an important part in providing some clarity and guideline for the SEP licensing practices.

The inherently problematic and disputable nature of FRAND commitment is evident, a prevailing consensus on FRAND does not exist. Similarly, there are sometimes discrepancies between the patent holder and the implementer which lead to disagreements and eventually to litigation. Therefore, a question arises whether FRAND terms represent a gap in the existing system and practice of SEP licensing. The purpose of this chapter is to assess landmark SEP cases in Europe and the United States, particularly how such courts and competition authorities have interpreted and applied FRAND, to uncover whether the existing case law provides any evidence of whether FRAND terms actually work in practice or not. This chapter is not, however, an all-encompassing study of FRAND litigation but rather an overview of the most well-known and relevant court cases in order to grasp the disputed concept of FRAND better. The study will indicate both clear trends and challenges in SEP licensing litigations which, in my opinion, provide some clarity on how the judiciary has interpreted FRAND but, at the same time, does not necessarily simplify nor solve the controversy surrounding FRAND terms. Arguably, this chapter reveals further the complex nature of SEP licensing: one-size-fit-all solution does not exist and a precise case-by-case analysis is always required.

4.1 Standard Essential Patents in Growing Patent Litigation

The ECSIP Consortium study points out that there has been a considerable growth in SEP litigation in recent decades which has attracted attention in the industry.[97] For example, there were a little over 20 SEP litigation cases in 2001 whereas ten years later the number was close to almost 40 cases.[98] There are, however, many different factors that could have contributed to such an increase in SEP litigation. The first and most obvious factor is the growth in the number of declared SEPs, mainly due to the development of technology and standard-setting activities over time. For instance, the numbers of declared SEP families in ETSI per year have indicated, on average, a steady increase since the year 2000.[99] Thus, as the number of SEPs grows so do the set of potential licensing negotiations and the chances of disagreement between the patent owner and the implementer. Another possible factor that also makes sense is the development of technology towards more complex connected products that implement numerous patent-protected inventions into a single device, such as a smart phone; "[t]he multitude of patents, parties and standards involved in these new consumer products undoubtedly increases the complexity of SEP licensing negotiations (and thus the potential

[97] *Ibid,* 124.
[98] *Ibid,* 126. See Figure 4.10.
[99] Tim Pohlman and Knut Blind, 'Landscaping Study on Standard Essential Patents (SEPs)' (2016) IPlytics EU Report for European Commission, 15. See Figure 5c.

for licensing disputes resulting in litigation)".[100] Furthermore, the study observes that SEPs are more likely to be litigated than non-essential patents and, in fact, most litigation takes place after a patent is included into a standard: "the estimated likelihood of litigation over their whole lifetime is around 16%, compared to 3% for a matched set of patents with otherwise similar characteristics" which means that the SEPs "are more than five times as likely to become litigated" than non-essential patents.[101] One explanation for the higher likelihood of litigation could be the possible increase in value once a patent is included into a standard since studies on patent infringements and disputes have shown that the value of a patent tends to contribute to the probability of litigation.[102]

The ECSIP Consortium study, however, places also responsibility on FRAND terms. The study claims that "the fact that FRAND conditions are not always clear and leave room for disagreement about the level of a royalty rate" contributes to a higher risk of litigation.[103] The study also points out a more complicated issue of SEP licensing that can heighten the uncertainty between the parties of a licensing opportunity, that is, a cross-licensing agreement. According to the study, a negotiation over a cross-license can increase the risk of litigation because "there is a concern that SEP owners go far in obtaining non-SEPs owned by licensees"; "[i]n areas such as smart phones, some non-SEPs [...] are considered to be very attractive in the marketplace, and SEP owners might be tempted to leverage their SEPs to obtain licenses for such non-SEPs".[104] Thus, although FRAND commitment obliges the SEP holder to license on a fair, reasonable and non-discriminatory royalty, the SEP holder can attempt pricing the SEP royalties higher so the cross-licensing agreement of the non-SEPs would seem as more attractive option for the licensee although it would actually be reluctant to license its patents. The study also addresses another issue of FRAND terms that can have an effect on the likelihood of litigation, that is, the transfer of SEPs. This concern culminates to the question of "whether the new owner of any SEPs is still bound by the original FRAND commitment" because otherwise there would be "a risk that FRAND conditions are no longer adhered to by the new owner after SEPs have been transferred" which would lead to a problematic situation from the point of view of the implementer.[105] Hence, the study alleges that the lack of clarity on the meaning of FRAND does not only lead to challenging situations,

[100] *OECD* (n 11) 11.
[101] *ECSIP Consortium* (n 96) 124.
[102] See: Jean O. Lanjouw and Mark Schankerman, 'Stylized Facts of Patent Litigation: Value, Scope and Ownership' (1997) National Bureau of Economic Research Working Paper 6297.
[103] *ECSIP Consortium* (n 96) 128.
[104] *Ibid.*
[105] *Ibid.*

such as possible distorted cross-licensing agreements and unclear transfers of SEPs, but is one element that drives the problem of increased risk to litigation.[106]

Despite of such study results, there has been also argumentation that the dramatic rise in patent litigation allegedly driven by SEPs has been exaggerated or presented inaccurately. For instance, Gupta and Snyder scrutinize in their study that there is actually "a surprising lack of empirical evidence" when it comes to proving that the smart phone patent wars a decade ago in the United States resulted mainly from SEPs.[107] One of the findings of the study is that these patent wars have actually had more to do with non-essential patents than SEPs because "[l]ess than one-third of the patents involved in smart phone litigation can be characterized as SEPs".[108] Thus, the role of SEPs in the perceived rise in patent litigation can be less significant than it is often claimed. Gupta and Snyder clarify further that the likelihood of litigation seems to be tied to the quality of the patent, regardless of whether the patent is declared to be essential to a standard or not; "[w]e find that at least the infringement findings are likely determined by patent quality characteristics, such as citations received by patents, and not by whether the patents are related to standards or not".[109] Although most of the SEP litigation has been related to the wireless cellular technologies, arguably the most prominent standards in the ICT industry, the findings of the study pinpoint that the patents pushing the smart phone patent wars have actually been those unrelated to the wireless standards. Gupta and Snyder provide a possible explanation to the last decade's spike in patent litigation in the smart phone industry: "[it] may have occurred primarily due to the entry of late and highly successful entrants in the mobile wireless ecosystem, causing a temporary disruption in the market equilibrium".[110]

4.2 Landmark Case Law Interpreting FRAND Terms

In order to comprehend the complex nature of SEP licensing on FRAND terms better, a deep dive into the case law of major jurisdictions in Europe and the United States is necessary. Most judgements that cover the core issues of FRAND commitment have typically been full of content in both continents and, therefore, this chapter is divided into subchapters that cover different but common aspects of SEP licensing that have been subject to debate. The analysis concentrates mainly on recent landmark cases covering wireless and mobile technology in

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[106] *Ibid,* 130-131.
[107] Kirti Gupta and Mark Snyder, 'Smart Phone Litigation and Standard Essential Patents' (2014) Hoover IP Working Paper Series No. 14006, 3. It might be worth noting that, at the time of the study was published, both Gupta and Snyder worked at Qualcomm Inc., a multinational semiconductor and telecommunications equipment company that holds a substantive SEP portfolio.
[107] *Ibid,* 4.
[108] *Ibid*.
[109] *Ibid,* 24.
[110] *Ibid,* 4.

which the courts have attempted to untie the challenging nature of SEP licensing, the ambiguous features of FRAND principles and the problematic determination of FRAND royalties. The purpose of this case law study is to help understanding whether SEP licensing on FRAND terms has appeared as complicated in practice as it is argued to be by numerous legal and economic scholars or whether the debated issues surrounding FRAND commitment have been, in the end, rather manageable and solvable. Thus, the different solutions applied by courts in Europe, in particular in the EU and the United Kingdom, and the United States will guide in the attempts to distinguish whether FRAND terms indeed represent a gap in the practice of patent licensing.

4.2.1 Notion of Hypothetical Negotiation

SEP licensing negotiations between the patent holder and the implementer are purely a commercial matter outside the environment of an SSO in the same way as is the case with other patents. However, the SEP holder's commitment to FRAND terms guarantees certain limits on the licensing agreement, particularly on the royalties, and is interpreted as imposing certain obligations on the patent owner, such as the duty to offer a license and negotiate in good faith. For these reasons, one could argue that the bilateral negotiations between the SEP holder and the implementer are a quite peculiar process where the parties are expected to know how to use FRAND to balance the imbalance between them resulting from the SEP owner's dominant position as its patent has been declared as essential to a set standard. Although any commercial negotiations can always fail, it seems that FRAND terms are a curveball that increments uncertainty and disagreement in the negotiations – the SEP owner claiming that it is entitled to an adequate compensation for its investment in research and development whereas the implementer claiming that it is entitled to protection from the abuse of a dominant position. Hence, a sign of unsuccessful SEP licensing negotiations is usually patent infringement and litigation.

When it comes to defining a FRAND licensing agreement, the United States legal system is adhered to a notion of "hypothetical negotiation" – what the agreement would have been if the negotiations had not failed. This type of reference point for the negotiations can be, however, difficult to determine in practice because it is "tied to a series of undefined or debated assumptions" such as the timing of the negotiations.[111] The case law in the United States has addressed the issue of timing multiple times because, especially in the case of SEPs, the timing of the hypothetical negotiation can have a significant impact on the end result; "[o]n the one hand, an early start date of the hypothetical negotiation at the time of the standard lock-in tends to favor the infringer and his ability to avoid investments and to next-best alternatives"

[111] *Pentheroudakis* (n 16) 55.

but "[o]n the other hand, a later start of the hypothetical negotiation at the "eve of the infringement" tends to favor the patent holder as it may result in higher royalty rates due to lock-in effects".[112] In fact, there is no biding rule for the timing of the hypothetical negotiation of SEP licensing but, contrary to regular patents, the hypothetical negotiation is not generally placed just before the occasion of infringement as it would favor the SEP owner more.

Microsoft v. Motorola[113] was one of the first judgements in the United States to devote efforts to deliberate the meaning of RAND and the timing of the hypothetical negotiations in the case of SEP licensing. The case concerned the licensing of Wi-Fi and H.264 video compression SEPs owned by Motorola and implemented by Microsoft in its products, such as the Xbox video game console, without permission. In 2010, after unsuccessful licensing negotiations between Motorola and Microsoft, Microsoft filed against Motorola claiming that Motorola is seeking unreasonable royalty rates for its standardized technology and therefore breaches its obligations to grant licenses on RAND terms, whereas Motorola asserted affirmative defenses and counterclaims denying the breach of RAND obligations and alleging patent infringement by Microsoft.[114] The outcome of the quite intricate litigation process was that the court held Motorola responsible for breaching its RAND obligations in the course of the negotiations and set much lower royalty rates for Motorola's patent portfolio compared to the ones Motorola had originally demanded from Microsoft.[115] However, Judge Robart well observed in his case opinion that, unless the SEP holder has a clear understanding of the meaning of RAND, it is difficult and even impossible to the SEP holder to figure out whether it is breaching its obligations or not.[116] Judge Robart clarified that, as the purpose of the RAND commitment is to encourage widespread adoption of a standard and to address the threats of patent hold-up and royalty stacking, a RAND royalty should be set at a level consistent with the purpose.[117]

Furthermore, the court adopted a modified version of the widely accepted *Georgia-Pacific* factors[118] to create a hypothetical negotiation between Motorola and Microsoft in order to determine the RAND royalties. The *Georgia-Pacific* framework is a list of 15 factors relevant for the assessment of patent damages which are often used as guiding principles for determining a reasonable royalty in a hypothetical negotiation. Judge Robart reasoned that the *Georgia-Pacific* analysis should not be applied 'as is' in the case of SEP licensing because the circumstances of such negotiations are different than with regular patents; firstly, the SEP

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[112] *Ibid.* Lock-in effect means a situation where a standard has achieved commercial significance and the manufacturer of a standard compliant product is "forced" to use certain SEPs so its products would be compatible with other products on the market.
[113] *Microsoft v. Motorola* (n 1).
[114] *Microsoft Corp. v. Motorola, Inc.*, 854 F.Supp. 2d 993 (W.D. Wash. 2012), 996-997.
[115] *Microsoft Corp. v. Motorola, Inc.*, CASE NO. C10-1823JLR (W.D. Wash. Apr. 25, 2013), 8 and 206.
[116] *Ibid,* 2.
[117] *Ibid*, 20-27.
[118] *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970), 1120.

owner has committed to RAND terms and secondly, the implementer will not be in compliance with its licensing obligations unless it takes a license from the SEP owner.[119] Therefore, contrary to the *Georgia-Pacific* framework, the timing of the hypothetical negotiation between Motorola and Microsoft was not placed just before the patent infringement began but before the patents were included into standards; "in the RAND context, it is critical to consider the contribution of the patented technology apart from the value of the patent as the result of its incorporation into the standard, the latter of which would improperly reward the SEP owner for the value of the standard itself" which, on the other hand, "would constitute hold-up value and be contrary to the purpose behind the RAND commitment".[120]

In *Apple v. Motorola*, Judge Posner, although reluctant to use the *Georgia-Pacific* factors, had a similar approach to the timing of a hypothetical negotiation: "The proper method of computing a FRAND royalty starts with what the cost to the licensee would have been of obtaining, just before the patented invention was declared essential to compliance with the industry standard, a license for the function performed by the patent."[121] Judge Posner explained his standpoint by emphasizing the purpose of FRAND terms to separate the value of the patent just as a patent from the additional or hold-up value conferred to the patent once it declared as essential to a standard because, otherwise, the patent owner would have more bargaining power and the implementer would be "at the patentee's mercy" as it has no other alternative.[122]

The US Court of Appeals for the Federal Circuit has also addressed the timing of a hypothetical negotiation and the use of *Georgia-Pacific* framework in SEP licensing cases. The decision *Ericsson v. D-Link*[123] concerned the infringement of Ericsson's Wi-Fi technology SEPs by several technology companies where the court found that Ericsson had complied with its RAND obligations and hence did not request an unreasonable royalty for the use of its technology. Circuit Judge O'Malley noted that, in order for the court to shift the timing of a hypothetical negotiation before the adoption of the standard, the implementer should provide evidence on patent hold-up; "[i]f D-Link had provided evidence that Ericsson started requesting higher royalty rates after the adoption of the 802.11(n) standard, the court could have addressed it by [...], perhaps, setting the hypothetical negotiation date before the adoption of the standard".[124] Moreover, the court pointed out that, although the *Georgia-Pacific* 15-factors list has never been "a talisman" for calculating a reasonable royalty, it has

[119] *Microsoft v. Motorola* (n 115) 32.
[120] *Ibid*, 39.
[121] *Apple v. Motorola* (n 63) 913.
[122] *Ibid.*
[123] *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201 (Fed. Cir. 2014).
[124] *Ibid,* 1234.

become a preferred way for the district courts.[125] Circuit Judge O'Malley, however, questioned the importance of the *Georgia-Pacific* factors as a basis for the determination of RAND royalties in SEP licensing; "[i]n a case involving RAND-encumbered patents, many of the *Georgia-Pacific* factors simply are not relevant; many are even contrary to RAND principles".[126] Nevertheless, the court's view was that it would be unwise to create new modified factors for the purposes of SEPs, even though Circuit Judge O'Malley recognized "the desire for bright line rules and the need for district courts to start somewhere".[127] Therefore, the court recommended that if the *Georgia-Pacific* factors are applied, the factors should be at least adjusted for RAND-encumbered patents and adapted on a case-by-case basis depending on the licensed technology.[128]

Interestingly, the concept of a hypothetical negotiation has made an appearance also in Europe but in another common law country, the United Kingdom. According to blog article by Smith, Justice Floyd referred to placing the timing of a hypothetical negotiation before the standardization has taken place as the "*ex ante* approach" in the hearing of *Nokia v. IPCom*[129]: "in the case of a patent which is essential to a standard, it is appropriate to enquire into what license terms would have been agreed between a willing licensor and a willing licensee on the basis of the invention which the patent protects but without knowledge that the patent will be incorporated into the standard".[130] In any case, this *ex ante* hypothetical negotiation has obviously had more jurisdictional relevance in the United States than in Europe when it comes to the litigation of FRAND licensing agreements.

4.2.2 Right to Seek Injunctive Relief

Although various jurisdictions have treated the right to seek an injunctive relief in the context of SEP infringement in different ways, there seems to be some type of a consensus in both continents that the availability of the right should be limited. The reason behind such limitation is the possible imbalance in bargaining power, mainly for the benefit of the patent owner, which conflicts with the purpose of FRAND terms. Most court cases that have addressed injunctions begin with a situation of failed licensing negotiations between the patent holder and the implementer and, as the implementer has already implemented the

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[125] *Ibid*, 1230
[126] *Ibid*.
[127] *Ibid*, 1232.
[128] *Ibid,* 1231.
[129] *Nokia Oyj (Nokia Corporation) v IPCom GmbH & Co KG* [2011] EWHC 1470 (Pat). *Nokia Oyj v IPCom GmbH & Co KG*, [2013] EWHC 1178 (Pat).
[130] Robert Lundie Smith, 'High Court builds up momentum to determine FRAND Licensing terms (PART 2)' (*Kluwer Patent Blog*, 19 February 2013) <http://patentblog.kluweriplaw.com/2013/02/19/high-court-builds-up-momentum-to-determine-frand-licensing-terms-part-2/?print=pdf> accessed 15 March 2021.

patent protected technology in its products without acquiring a license, the SEP owner files an infringement claim requesting for an injunction in order to enforce its rights. Otherwise an effective legal remedy for patent infringement, permitting injunctive relief in the case of SEPs may actually enable the patent holder to act in anti-competitive manner, for example, by using injunction to engage in patent hold-up.

In the EU, the right to seek injunctive relief on the basis of SEPs is a matter of competition law. In 2014, the European Commission adopted two rather well-known decisions – from the competition law perspective – that found that a dominant SEP holder by seeking preliminary or permanent injunction for patent infringement against a willing licensee abuses its dominant position within the meaning of Article 102 TFEU. Both cases concerned Apple products that infringed SEPs; a patent essential to the GPRD standard owned by Motorola and a patent essential to the UMTS standard owned by Samsung. In the *Motorola* decision[131], the Commission adopted an infringement decision against Motorola whereas, in the *Samsung* decision[132], the Commission did not establish an infringement because Samsung offered commitments to address the competition concerns and to ensure that it will not be able to seek injunctions against any potential willing licensee. According to the Commission, the SEP holder committed to FRAND terms is, however, entitled to seek an injunction against a potential licensee in certain example scenarios, such as "the potential licensee is in financial distress and unable to pay its debts", "the potential licensee's assets are located in jurisdictions that do not provide for adequate means of enforcement of damages", or "the potential licensee is unwilling to enter into a license agreement on FRAND terms and conditions, with the result that the SEP holder will not be appropriately remunerated for the use of its SEPs".[133]

A landmark case in the EU regarding SEP licensing on FRAND terms, the legitimacy of injunctive relief and the negotiation process between the patent owner and the implementer is the *Huawei v. ZTE* decision by the CJEU in 2015[134], which was a request for a preliminary ruling from the Düsseldorf District Court in Germany (the "Landgericht Düsseldorf") concerning the interpretation of Article 102 TFEU. The dispute between competitors Huawei and ZTE began in 2011 when Huawei brought an action for patent infringement against ZTE before the District Court, seeking an injunction prohibiting the infringement, after the SEP licensing negotiations relating to a patent essential to Long Term Evolution standard owned

[131] Summary of Commission Decision of 29 April 2014 relating to a proceeding under Article 102 of the Treaty on the Functioning of the European Union and Article 54 of the EEA Agreement [2014] Case AT.39985 Motorola, OJ C344/6.
[132] Summary of Commission Decision of 29 April 2014 relating to a proceeding under Article 102 of the Treaty on the Functioning of the European Union and Article 54 of the EEA Agreement [2014] Case AT.39939 Samsung, OJ C350/8.
[133] *Motorola* decision (n 131) para 23.
[134] *Huawei v. ZTE* (n 2).

by Huawei and implemented by ZTE in its products without permission had failed. One of the District Court's questions referred to the Court of Justice was that does the SEP owner, which has committed to FRAND terms, abuse its dominant market position if it seeks injunctive relief against the implementer even though the implementer has declared that it is willing to licensing negotiations; thus, "whether the action for infringement seeking an injunction prohibiting infringement [...] is to be characterized as an 'abuse of a dominant position', within the meaning of Article 102 TFEU".[135] The Court of Justice observed that the protection of intellectual property rights granted by law essentially means that "the proprietor may not be deprived of the right to have recourse to legal proceedings to ensure effective enforcement of his exclusive rights" and similarly "the user of those rights, if he is not the proprietor, is required to obtain a license prior to any use" but, on the other hand, FRAND commitment does "justify the imposition on that proprietor of an obligation to comply with specific requirements when bringing actions against alleged infringers for a prohibitory injunction".[136]

According to the Court of Justice, as FRAND commitment creates legitimate expectations on implementers, a refusal by the SEP holder to grant a license on FRAND terms may constitute an abuse within the meaning of Article 102 TFEU.[137] For these reasons, the Court provided a criteria for the bilateral negotiation process between the patent owner and the implementer in order to clarify the situations in which seeking injunctive relief is legitimate. The Court held that the SEP holder does not abuse its dominant position, within the meaning of Article 102 TFEU, by bringing an action for a prohibitory injunction if certain circumstances are fulfilled prior such action. Firstly, the SEP holder must notify the implementer of a patent infringement by specifying the patent and the way in which it has been infringed.[138] Secondly, if the implementer expresses its willingness to negotiate a licensing agreement on FRAND terms, the SEP holder must offer a specific and written license complying with FRAND terms which specifies the royalty and its calculation method.[139] After that it is the implementer's responsibility to either diligently respond to the offer in accordance with recognized commercial practices and in good faith or promptly make a written counteroffer that corresponds to FRAND terms.[140] If the SEP holder rejects the counteroffer, the implementer has to provide appropriate security conforming recognized commercial practices and the calculation of the security has to include, among other things, the number of the past acts of the use of the SEP.[141] Thus, if the implementer fails to respond to the SEP holder's notification

[135] *Ibid*, paras 39 and 41.
[136] *Ibid*, paras 58-59.
[137] *Ibid*, para 53.
[138] *Ibid,* para 61.
[139] *Ibid,* para 63.
[140] *Ibid,* paras 65-66.
[141] *Ibid,* para 67.

of infringement, rejects the SEP holder's offer that complies with FRAND, makes a counteroffer that does not comply with FRAND terms, or does not provide security, the dominant SEP holder may request a prohibitory injunction from the court without breaching Article 102 TFEU.

While the right to seek injunctive relief in SEP infringement cases is subject to competition law in the EU, the courts in the United States have used the principles of equity to assess whether to grant injunctions in cases of patent infringement[142] which apply to SEPs as well. Thus, the injunctive relief is a matter of the district court's discretion to achieve a fair and equal outcome for the parties. In order to mitigate the risk of patent hold-up, the Supreme Court decision in the case *eBay v. MercExchange*[143] presented a strict framework for district courts to take into consideration when exercising their discretion in actions seeking injunction. Justice Thomas held that "[a]ccording to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief" which means that "[a] plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction".[144]

The more recent district court judgement *Apple v. Motorola* set out that the normal equity standard and the four-factor test applies also to SEP infringement cases.[145] Satisfying all four factors of the *eBay* test is, however, nearly impossible for the SEP holder and, therefore, it has become almost a norm that the US district courts do not issue injunctions for the infringement of FRAND-encumbered SEPs although it has not been ruled out. For instance, Judge Posner in *Apple v. Motorola* noted that "[t]o begin with Motorola's injunctive claim, I don't see how, given FRAND, I would be justified in enjoining Apple from infringing the [SEP] unless Apple refuses to pay a royalty that meets the FRAND requirement".[146] Similarly the Circuit Judge Reyna confirmed that Motorola was not entitled to an injunction because Motorola did not demonstrate that the patent infringement by Apple caused Motorola irreparable harm; "[c]onsidering the large number of industry participants that are already using the system claimed in the [SEP], including competitors, Motorola has not provided any evidence that adding one more user would create such harm".[147] For these reasons, the Federal Circuit held

[142] 35 U.S.C., Part III, Chapter 29, Section 283.
[143] *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).
[144] *Ibid,* 2.
[145] *Apple v. Motorola* (n 63) 915.
[146] *Ibid,* 913-914.
[147] *Apple Inc. v. Motorola, Inc.*, No. 12-1548 (Fed. Cir. 2014), 72.

that, instead of injunction, "money damages are adequate to fully compensate Motorola for any infringement".[148]

The US Federal Trade Commission (FTC) has also addressed the right to seek injunctive relief in cases of SEP infringement but viewing it rather as a matter of unfair competition. In 2013, the Commission issued two decisions that found that the SEP holder's conduct of seeking injunctive relief against willing licensees can be considered as an unfair method of competition under Section 5 of the Federal Trade Commission Act[149]. The first case, the *Bosch* decision[150], concerned Bosch's acquisition of the SPX Service Solutions business which held several FRAND-encumbered SEPs relating to air conditioning technology. Prior to the acquisition, SPX had breached its FRAND commitment by bringing forth claims seeking injunctions against willing licensees, which Bosch eventually agreed to abandon. The Commission explained its position in its statement that a negotiation occurring under a threat of an injunction can weigh heavily in favor of the patent owner and lead to excessive royalties.[151] The second case, *Motorola and Google* decision[152], had a very similar factual basis as the *Bosch* decision, where Motorola had breached its FRAND commitment by seeking injunctions against willing licensees of its SEPs relating to smart devices before Google acquired Motorola. In its decision and order, the Commission, however, stated exceptions to the interpretation of FRAND commitment as a willingness to give up the right to seek injunctive relief – for example, a patent holder can seek an injunction for alleged infringement of a FRAND patent against a potential licensee who "is outside the jurisdiction of the US district courts" or "has stated in writing or in sworn testimony that it will not license the FRAND patent on any terms".[153]

4.2.3 Determining Royalty Rate

Generally, the main disagreement between the patent holder and the implementer in SEP licensing concerns the offered royalty rate, whether the royalties requested by the patent holder are in fact fair, reasonable and non-discriminatory. Although the aim of FRAND commitment is to protect the implementer from the risk of patent hold-up and to ensure that the SEP holder receives an adequate compensation for its investment in research and development, the licensing negotiations between the parties often fail due to the differing views and perceptions about what royalty rate is FRAND for the other party. Thus, when it

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[148] *Ibid.*
[149] Federal Trade Commission Act, 15 U.S.C. §§ 41-58.
[150] *Robert Bosch GmbH,* Docket No. C-4377, File Number 121-0081 (FTC 2013).
[151] Statement of the Federal Trade Commission in the matter of *Robert Bosch GmbH*, FTC File Number 121-0081, 2.
[152] *Motorola Mobility LLC, and Google Inc.,* Docket No. C-4410, File Number 121-0120 (FTC 2013).
[153] *Ibid*, II E 1 and 2.

comes to SEP licensing, the role of courts in solving the amount or level of royalties as well as the methods of royalty calculation has been significant, particularly in the United States. There is, however, no single correct way to determine a FRAND royalty rate and the existing case law in the United States has broken down into varying judgements of different calculation methods attempting to determine a specific reasonable royalty on a case-by-case basis. Hence, the US courts have discretion in the establishment and calculation of reasonable royalties.

As perceived in *Apple v. Motorola* decision, the purpose of FRAND terms is to separate the value of the patent itself from the additional or hold-up value conferred to the patent once it declared as essential to a standard.[154] This benchmark used to determine a FRAND royalty is referred to as the *ex ante* incremental value of the patent, that is, "the difference between the patent's value and the next-best non-infringing substitute patent before the first patent has been adopted into the standard".[155] Similarly, for instance, Judge Robart adopted the *ex ante* incremental value method as the basis to calculate a RAND royalty in *Microsoft v. Motorola* judgement; "[f]rom an economic perspective, a RAND commitment should be interpreted to limit a patent holder to a reasonable royalty on the economic value of its patented technology itself, apart from the value associated with incorporation of the patented technology into the standard".[156] Judge Robart also clarified that "a reasonable royalty rate for an SEP committed to a RAND obligation must value the patented technology itself, which necessarily requires considering the importance and contribution of the patent to the standard" and consequently, "[i]f alternatives available to the patented technology would have provided the same or similar technical contribution to the standard, the actual value provided by the patented technology is its incremental contribution".[157] To put it simply, the determination of a FRAND royalty based on the *ex ante* incremental value should consider comparing the SEP protected technology to the alternatives that could have been declared essential to the standard.

The method of *ex ante* incremental value was analyzed more in-depth in *In re Innovatio*, a case in which the plaintiff Innovatio IP Ventures had sued numerous shops, hotels, restaurants, retailers and other commercial users of wireless internet technology that infringed over twenty patents owned by Innovatio.[158] When it came to the comparison of SEPs and the alternatives that could have been declared essential to the standard, Judge Holderman explained that such alternatives do not "drive down the royalty in the hypothetical negotiation by as much as technology in the public domain" because it is highly unlikely that the owner of an alternative patented technology would be willing to give away its technology for free to be

[154] *Apple v. Motorola* (n 63) 913.
[155] *Sidak* (n 60) 971.
[156] *Microsoft v. Motorola* (n 114) 25-26.
[157] *Ibid,* 27-28.
[158] *In re Innovatio IP Ventures, LLC Patent Litigation*, MDL Docket No. 2303 (N.D. Ill. Sep. 27, 2013).

adopted into the standard.[159] Thus, Judge Holderman reasoned that "the existence of patented alternatives does not provide as much reason to discount the value of Innovatio's patents as does the existence of alternatives in the public domain".[160]

In order to address the issue of unreasonably large damages in patent litigation, the US courts have regularly adopted the requirement of apportionment; "[u]nder apportionment, the portion of the overall value of the product that is "attributable" to the patented technology is identified" and "[t]hen, the reasonable royalty damages are calculated with reference to this apportioned value of the patented technology rather than the overall value of the product".[161] Interestingly, the apportionment requirement is not a new concept in patent litigation and it dates all the way back to the 19th century. In 1853, the Supreme Court held in *Seymour v. McCormick* that the various different expenses to make a product, such as the cost of the materials and labor, should be deducted from the product's paid price in order to "approximate to something like the actual loss that the patentee sustains in a case where his right has been violated" because, otherwise, "the unfortunate mechanic" may be forced to pay unreasonable damages for the patentee if the measure of damages is calculated for an entire machine.[162] Furthermore, the apportionment requirement has had relevance also in SEP licensing litigation and hence the jurisprudence has developed different calculation methods to meet and express the apportionment rule.

One of the prevalent methods used to implement the requirement of apportionment in the calculation of patent damages is the Entire Market Value Rule (EMVR). In 1884, Justice Field of the US Supreme Court defined the rule in the *Garretson v. Clark* judgement as follows: "The patentee […] must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative, or he must show by equally reliable and satisfactory evidence that the profits and damages are to be calculated on the whole machine, for the reason that the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature."[163] Thus, if the patent owner does not provide any adequate evidence to proof that the calculation of damages should be based on the entire market value of the infringing product,

[159] *Ibid,* 37.
[160] *Ibid.*
[161] Elizabeth M. Bailey, Gregory K. Leonard, et al., 'Making Sense of "Apportionment" in Patent Damages' (2011) 12 Columbia Science and Technology Law Review 255, 256.
[162] *Seymour v. McCormick,* 57 U.S. 480 (1853).
[163] *Garretson v. Clark,* 111 U.S. 120 (1884).

then appropriation is required. The entire market value rule was also affirmed by the Federal Circuit much more recently but the rule should be applied only in narrow circumstances.[164]

In *Ericsson v. D-Link*, the Federal Circuit applied the entire market value rule in the context of SEP infringement. Firstly, although the entire market value rule affirms the requirement of apportionment, Circuit Judge O'Malley noted that there is no specific method to apportion the value of the patented features and, in fact, it could be done in various ways; "by careful selection of the royalty base to reflect the value added by the patented feature, where that differentiation is possible; by adjustment of the royalty rate so as to discount the value of a product's non-patented features; or by a combination thereof".[165] Secondly, the Federal Circuit described that the concept of an entire market value rule has actually two different parts: a substantive legal rule and a separate evidentiary principle. The substantive legal rule means that "the ultimate combination of royalty base and royalty rate must reflect the value attributable to the infringing features of the product, and no more" whereas the separate evidentiary principle means that "care must be taken to avoid misleading the jury by placing undue emphasis on the value of the entire product".[166] Thus, the fundamental purpose of the principle is to assist the jury system in reliably implementing the substantive statutory requirement of apportionment of royalty damages to the invention's value.[167] In *Ericsson v. D-Link*, the jury found that Ericsson's Wi-Fi technology SEPs were infringed and, therefore, the jury awarded Ericsson 15 cents per infringing device.

Another prevalent method used by the US courts to implement the requirement of apportionment in the calculation of royalties is the Smallest Saleable Patent Practicing Unit (SSPPU), also referred to as the Smallest Saleable Infringing Unit. The smallest saleable infringing unit language arose first time in *Cornell v. Hewlett-Packard* decision where the district court held that, instead of using a royalty base based on a product with significant non-infringing components, "the smallest saleable infringing unit with close relation to the claimed invention" was the most logical alternative for the calculations.[168] Thus, when it comes to multicomponent products, the price of the smallest possible component that is practicing or infringing a patent should be the basis of the patent damages calculations. In *Virnetx v. Cisco* judgement, the Federal Circuit analyzed further the smallest saleable unit approach; "the requirement that a patentee identify damages associated with the smallest saleable patent-practicing unit is simply a step toward meeting the requirement of apportionment".[169] Chief

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[164] See: *Laserdynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51 (Fed. Cir. 2012), 67.
[165] *Ericsson, Inc. v. D-Link Sys.* (n 123) 1226.
[166] *Ibid.*
[167] *Ibid.*
[168] *Cornell University v. Hewlett-Packard Company*, 609 F.Supp. 2d 279 (N.D.N.Y. 2009), 287-288.
[169] *Virnetx, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308 (Fed. Cir. 2014), 1327.

Judge Prost explained that "[w]here the smallest saleable unit is, in fact, a multi-component product containing several non-infringing features with no relation to the patented feature [...], the patentee must do more to estimate what portion of the value of that product is attributable to the patented technology" because otherwise the entire market value method would "swallow the rule of apportionment".[170]

The applicability of the method of smallest saleable patent practicing unit in a SEP infringement case was addressed in *Scientific v. Cisco*.[171] The case concerned a Wi-Fi technology SEP owned by Commonwealth Scientific and Industrial Research Organization, the principal research arm of the Australian federal government, and infringed by Cisco products using versions of the Wi-Fi standard. The district court rejected Cisco's damages model of the smallest saleable patent practicing unit – in this case, a wireless chip used in Cisco's products – and questioned whether the model provides a sufficient royalty base in SEP infringement cases; "benefit of the patent lies in the idea, not in the small amount of silicon that happened to be where that idea is physically implemented" and "[b]asing a royalty solely on chip price is like valuing a copyrighted book based only on the costs of the binding, paper, and ink needed to actually produce the physical. While such a calculation captures the cost of the physical product, it provides no indication of its actual value".[172] Although Cisco claimed that the district court had erred in its decision, the Federal Circuit also held that the smallest saleable patent practicing unit principle is inapplicable in the case.[173] Chief Judge Prost recognized that each case presents unique facts and clarified that the principle should not be applied because the district court did not apportion from a royalty base at all.[174] Instead, the district court had referred to the hypothetical negotiations between the parties and valued the asserted patent based on comparable licenses, another accepted method for calculation, which already built in apportionment to the district court's analysis.[175]

In conjunction with the benchmark of incremental value and the requirement of apportionment, including the entire market value rule and the smallest saleable patent practicing unit, there are generally three approaches to define and calculate fair, reasonable and non-discriminatory royalties for SEPs: the bottom-up approach, the top-down approach and the comparable licenses approach. The bottom-up approach, as assessed in *Microsoft v. Motorola* and *Ericsson v. D-Link* decisions, refers to the ex-ante incremental value of the patent by identifying the costs of implementing available and comparable alternatives that

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[170] *Ibid,* 1327-1328.
[171] *Scientific v. Cisco Sys., Inc.*, 809 F.3d 1295 (Fed. Cir. 2015).
[172] *Ibid,* 1300. Citing *Commonwealth Sci. & Indus. Research Org. v. Cisco Sys., Inc.*, No. 6:11-CV-343, 2014 WL 3805817 (E.D.Tex. July 23, 2014).
[173] *Ibid,* 1300-1301 and 1302.
[174] *Ibid,* 1302
[175] *Ibid,* 1302-1303.

could have been adopted into the standard. Thus, the royalties for individual SEPs are determined in isolation of other SEPs that cover the same standard. The top-down approach, on the other hand, was adopted, for instance, in *In re Innovation* judgement but also in a more recent landmark decision *TCL v. Ericsson*[176] which described the approach as follows: "A top down model aims to value a portfolio of SEPs by determining a fair and reasonable total aggregate royalty for all patents that are essential to a standard. It then apportions that royalty to the SEP owners based on the relative value of their portfolio against the values of all patents essential to the standard."[177] As a result, this type of calculation method creates a "per-SEP royalty".[178] The district court case concerned a SEP licensing dispute between Ericsson, the owner of several telecommunications SEPs, and TCL Communication Technology Holdings, a manufacturer and distributor of cell phones that implemented Ericsson's technology.

The top-down analysis used in *TCL v. Ericsson* to determine FRAND royalties for the SEPs owned by Ericsson was, in fact, cross-checked by the district court by using a method of comparable licenses. The comparable licenses approach is considered as the third, but more market-based, alternative method for the calculation of FRAND royalties and it focuses on using similar patent licenses or patent transactions as evidence to evaluate the market value of the technology in question. In *TCL v. Ericsson*, the district court in practice identified six firms (Apple, Samsung, LG, HTC, Huawei, and ZTE) that were similarly situated to TCL and that had entered into SEP licenses with Ericsson in order to determine a non-discriminatory royalty rate by comparing the economic deals offered by Ericsson before.[179] The comparison of licenses on a common basis, however, required the district court to "unpack" the previous licenses; "unpacking requires the Court to account for cross-licenses, lump sum payments, pass-through rights, and other issues".[180] As the royalty rate figures produced by the top-down analysis and the comparable licenses analysis were comparable, the district court came to the conclusion that the two calculation methods acted as a reasonable check on each other and that the rates it had calculated were FRAND. Thus, the method of comparable licenses, when used adequately, can be a reliable approach to calculate a FRAND royalty rate since it takes into account prior licensing practices and market conditions.

The US courts have been quite inclined to royalty determinations but the same cannot be said for the European courts. Although the German courts are known to be progressive in solving

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[176] *TCL Commc'n Tech. Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson*, CASE NO: SACV 14-341 JVS(DFMx) (C.D. Cal. Mar. 9, 2018).
[177] *Ibid,* 14.
[178] Maurits Dolmans, David R. Little, et al. 'TCL v. Ericsson: Landmark Judgement on FRAND Licensing' (2018) Cleary Gottlieb Alert Memorandum <https://www.clearygottlieb.com/-/media/files/alert-memos-2018/20180109-tcl-v-ericsson--landmark-judgment-on-frand-licensing.pdf> accessed 28 March 2021.
[179] *TCL v. Ericsson* (n 176) 54.
[180] *Ibid.*

SEP licensing disputes and the German case law has addressed, for example, the comparison of prior licensing agreements and patent pool rates in analyzing whether offered royalties have been consistent with FRAND commitments[181], determining specific methods or ways to calculate FRAND royalties have been, nevertheless, generally avoided. However, this is not the case with England anymore; a rather recent ruling *Unwired Planet v. Huawei*[182] was the first major judgement on SEP licensing and FRAND commitment issues in the United Kingdom that considered the court's competency to determine a FRAND royalty rate. The case began in 2014 when Unwired Planet sued Huawei for the infringement of its six patents and, of them, five were patents declared essential to various telecommunications standards. In fact, the judgement of the High Court is very similar with the *TCL v. Ericsson* decision because Justice Birss used also a combination of the same calculation methods of top-down analysis and comparable licenses but focused the analysis on the latter – the top-down approach was used only as a cross-check. Justice Birss reasoned his position as follows: "A FRAND rate can be determined by using comparable licenses if they are available. Freely negotiated licenses are relevant evidence of what may be FRAND. A top down approach can also be used [...] but this maybe more useful as a cross-check".[183]

Another interesting aspect of the *Unwired Planet v. Huawei* judgement was the interpretation of the term 'non-discriminatory' of FRAND. Justice Birss distinguished the concept of non-discrimination into two obligations: a "hard-edged" non-discrimination and a "general" non-discrimination.[184] According to Justice Birss, the general non-discrimination obligation refers to an overall assessment of FRAND from which a benchmark royalty rate can be determined whereas the hard-edged non-discrimination obligation is "a distinct factor capable of applying to reduce a royalty (or adjust any license term in any way) which would otherwise have been regarded as FRAND".[185] To put it simply, the hard-edged non-discrimination obligation requires the patent owner to offer the same or similar royalty rates as offered for similarly situated licensees.[186] However, the High Court's position was that the hard-edged non-discrimination obligation is subject to limitation. Justice Birss clarified that FRAND does not introduce a hard-edged non-discrimination obligation unless distortion of competition is also considered.[187] The High Court ruled, however, that the concept of hard-edged non-

[181] See: Matthieu Dhenne, 'Calculation of FRAND Royalties: An Overview of Practices Around the World' (2019) European Intellectual Property Review 754, 757.
[182] *Unwired Planet International Ltd v Huawei Technologies Co. Ltd & Anor* [2017] EWHC 711 (Pat).
[183] *Ibid,* para 806.
[184] *Ibid,* para 177.
[185] *Ibid.*
[186] *Ibid,* para 485.
[187] *Ibid,* para 501.

discrimination setting a lower royalty rate for Huawei was not applied because a distortion of competition was not established in the case.

4.3 Emerging Trends in SEP and FRAND Case Law

As perceived in this chapter, nearly all disputes concerning SEP licensing on FRAND terms addressed by the courts and competition authorities in the United States and Europe have related to either patent infringement damages, royalty rates, injunctions or competition concerns. This indicates a clear trend in SEP litigation, the private and commercial nature of SEP licensing negotiations has turned out to be challenging for the patent owner and the implementer due to the exceptional obligations placed by the FRAND commitment. Another frequent trouble to throw into the mix is the initial setting of the negotiations where the manufacturer of a standard compliant product has already made investments to implement the standardized technology in its product before acquiring a license from the SEP holder. The ongoing patent infringement further complicates the situation and adds tension between the patent owner and the implementer. Hence, it does not come as a surprise that the complexities in SEP licensing practices and the interpretation of FRAND terms, in addition to the complicated technological features, have resulted in judicial actions between the parties in order to obtain some solution and clarity to the unsuccessful negotiations.

Instead of turning to the definition of each FRAND term, judicial authorities in both continents have rather attempted to define FRAND by focusing on the rationale behind FRAND commitment – what is aimed to achieve with the obligation of fair, reasonable and non-discriminatory licensing. The courts have concentrated on balancing between the need to secure the availability of technological solutions essential to a standard to all possible implementers and the need to ensure that the patent holders are fairly compensated for their innovations and investments in research and development. Judges have recognized the economic functions of FRAND but the demand to address the risk of patent hold-up has particularly come to the fore in the judgements. Therefore, the notions of hypothetical negotiation and *ex ante* incremental value of the patent have surfaced, mainly in the US courts, to prevent patent hold-up. The courts have reasoned that such approach, setting the hypothetical negotiation before the patent is incorporated into a standard and considering the value of the patent apart from the value of the standard, is consistent with FRAND commitment because it does not improperly reward the owner of an SEP.

When it comes to the right to seek injunctive relief, policymakers in the United States and Europe have recognized that the right should be limited to some extent in the context of SEP licensing. Otherwise, there could be an imbalance in bargaining power between the patent holder and the implementer which can result in patent hold-up. The CJEU decision *Huawei*

v. ZTE has impacted greatly the practice of SEP licensing negotiations in the EU, emphasizing the duty to negotiate in good faith and the actual conduct of the patent owner and the implementer in the course of the negotiations. Hence, injunctions are not automatically available but awarded only after appropriate actions by the parties that are in accordance with the FRAND obligations. The approach by the Court of Justice considers the bargaining power of both the patent owner and the implementer and acknowledges that injunctive relief should still remain available for SEP holder against unwilling licensees. In the United States, however, the availability of injunctions has been perceived more as a tool to address the risk of patent hold-up by the SEP holder and, therefore, it has been subject to a stricter framework. The district courts have authority to rule on injunctions and, as the injunctive relief has been generally considered as a disproportionate measure for SEPs, it has become almost a standard practice that injunctions are not issued for the infringement of FRAND-encumbered patents.

The courts in the Unites States have had discretion but also desire in the determination and calculation of FRAND royalties. The case law, however, has not established a single correct way to determine a royalty base nor royalty rates and has rather broken down into varying judgements that have introduced different approaches and calculation methods, depending on facts of each case. In addition to the notion of *ex ante* incremental value of the patent, the courts have utilized the apportionment requirement to set the royalty base, which has been implemented by the entire market value rule approach or the smallest saleable patent practicing unit approach, and used different methods to calculate royalties, such the bottom-up approach, the top-down approach, as well as the comparable licenses approach. Furthermore, such royalty and damages calculations have been steered by the efforts of the patent owner and the implementer to convince the court and the jury to use a particular method by providing facts, technical data, expert testimonies and other reliable and non-speculative evidence propping up the use of such method. All of the notions and methods, whether used individually, in combination, or for cross-checking, have been nevertheless useful benchmarks for the courts in their attempts to determine a fair, reasonable and non-discriminatory royalties on a case-by-case basis.

In contrast to the US courts' active role and many rather advanced methods to determine FRAND royalties, the courts in Europe have been more reluctant to act in this area, with the exception of the *Unwired Planet v. Huawei* judgement. Instead of defining or ruling on specific methods to determine a fair, reasonable and non-discriminatory royalty rate, the European judicial authorities have more focused on assessing whether the conduct of the patent holder and the implementer during the bilateral licensing negotiations has complied with FRAND commitments and whether the offered FRAND royalties have been actually within the range of FRAND rates. In 2017, the European Commission released a

Communication that clarified the Union's position that "one-size-fit-all solution" does not exist for SEP licensing.[188] Nevertheless, the Commission considered that "[d]etermining a FRAND value should require taking into account the present value added of the patented technology" and "[t]hat value should be irrespective of the market success of the product which is unrelated to the value of the patented technology".[189] The Commission also stated further that defining a FRAND value by the parties of the negotiations requires the parties "to take account of a reasonable aggregate rate for the standard".[190] Thus, the Commission has focused in providing the SEP owner and the implementer with instructions and principles that should be followed in the negotiations in order to facilitate fair, reasonable and non-discriminatory SEP licensing.

When taking into consideration the different judgements and decisions of courts and competition authorities in Europe and the Unites States, this chapter provides some clarity on how judicial authorities have interpreted FRAND commitment and what is, in the eyes of the judiciary, the intent and purpose behind such terms. However, one could argue that the study of the landmark SEP cases does not simplify nor unwind the controversy surrounding FRAND – it just further reveals its complex nature. Due to the intricate technologies and the commercial nature of SEP licensing negotiations, the background and facts of each case differ which always requires a precise case-by-case analysis from the courts and competition authorities to decide whether FRAND obligation has been adhered. The European Commission expressed it well; there is no one-size-fit-all solution. It is clear that the notion of FRAND terms has been consistently subject of debate but the judicial decisions addressing and interpreting SEP licensing on FRAND have also received criticism from scholars. Furthermore, the disputed and litigated nature of SEP licensing further strengthens the assumption that FRAND appears as an exceptionally challenging principle in SEP licensing context. Therefore, the next chapter will focus, on the one hand, on the criticism FRAND commitment has received as well as the proposed solutions and alternatives that are claimed to either fix or replace the ambiguous FRAND terms but, on the other hand, on the question whether the current system of SEP licensing on FRAND terms is actually "broken" as often claimed.

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[188] European Commission, *Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee – Setting out the EU approach to Standard Essential Patents* (COM(2017) 712 final), 8.
[189] *Ibid.*
[190] *Ibid.*

5 PROPOSED ALTERNATIVES TO FRAND TERMS

The interaction between standards and patents has a crucial role in supporting innovation and growth all over the world, particularly in the telecommunications industry where standardization ensures the interoperability and interconnectivity of digital products. Hence, the importance of standardized technologies should not be underestimated when it comes to the economic potential of digitalization and connected devices; the manufacturers of standard-compliant products need to have access to standards in order to generate social benefits and maximize welfare. The fair, reasonable and non-discriminatory licensing commitment by the patent owner is therefore viewed as a mechanism that ensures the availability of standardized technology to any potential implementer and rewards the patent holder for its investment in research and development in the standard. However, when taking into consideration the legal and economic theoretical considerations as well as the case law interpreting FRAND commitment, it is apparent that licensing SEPs on FRAND terms is a challenging task. The previous chapters have provided evidence that, firstly, the licensing negotiations between the patent holder and the implementer are not always seamless, secondly, the risks leading to a possible conflict and litigation are quite clear and eminent and, thirdly, the enforcement of SEPs and the interpretation of FRAND by the courts and competition authorities has also been a challenging task.

Problems arise from the commercial nature of SEP negotiations, the conflicting interests of the patent owners and the prospective licensees, and the ambiguity over fair, reasonable and non-discriminatory licensing – the implementer accusing the patent owner of breaching its FRAND commitment by charging excessive royalties while the patent owner accusing the implementer of knowingly infringing the SEP by neglecting the acquisition of a license. Such disagreements between the parties usually prolong the licensing negotiations, especially if the dispute becomes eventually litigated, which may delay the overall use of the standardized technologies and ultimately even hamper innovation and growth in the industry of connected devices. Understandably, the complicated nature of SEP licensing on FRAND terms has raised concerns among scholars and industry actors. Generally, the different theoretical approaches of FRAND in the academic literature have been debated back and forth but the landmark judicial decisions in Europe and the United States addressing and interpreting SEP licensing on FRAND terms have not been spared from criticism either. This makes one question whether FRAND actually works or could there be any better solutions to approach the issues of SEP licensing. Thus, these challenges and difficulties associated with FRAND commitment have not gone unnoticed and, as a result, some proposals have been made to either attempt to fix the flaws of FRAND or completely replace FRAND commitment with a new and allegedly better and more workable alternative.

This chapter will cover the most common arguments against the functionality of SEP licensing on FRAND terms as well as the criticism towards the case law interpreting and applying FRAND commitment in order to address the challenges generally identified with SEP licensing. After revealing these specific considerations of why scholars have begun to question FRAND in the first place, this chapter will showcase different proposed remediations and alternatives to correct the shortcomings of FRAND terms. The strengths and weaknesses of each proposal are uncovered from a legal and economic theoretical perspective which will vouch for the fact that each has its own defects and flaws and, therefore, none of the options have been implemented widely. In fact, this chapter will argue that SEP licensing on FRAND terms is still a better and more workable option compared to the other proposals allegedly fixing or replacing FRAND. Lastly, this chapter will provide arguments why and how, despite of its downsides, FRAND terms can work.

5.1 Criticism Towards FRAND Terms

Chapter 3 already well touched the main and most common subjects of disagreement among academics when it comes to the notion of FRAND terms. Although the commercial and private nature of SEP licensing negotiations and the absence of a fixed meaning for FRAND terms have also received support, many disagree with the unclear meaning of FRAND and the lacking efforts by the SSOs to clarify the scope and nature of the concept. Thus, it has been argued that fair, reasonable and non-discriminatory licensing loses its meaning when very little guidance is provided for the parties of the licensing negotiations on how to interpret and apply FRAND terms. Legal and economic scholars have had differing views on how the terms 'fair', 'reasonable' and 'non-discriminatory' should be interpreted and on what merits should the royalty rates be based on. Especially the questions of whether a fair and reasonable royalty is the royalty *ex ante* competition, how to assess licensees as similarly situated when it comes to non-discrimination, and whether FRAND commitment by the patent owner indicates a waiver of its right to seek injunctive relief have been subject of debate. Correspondingly nearly all disputes concerning SEP licensing on FRAND terms addressed by the courts and competition authorities have more or less related to same topics and issues of FRAND as contested among academics. Although the importance of case law attempting to clarify the interpretation of FRAND terms should not be underestimated, the judicial decisions have anyway received criticism.

Firstly, the notion of hypothetical negotiation, the modified version of the *Georgia-Pacific* factors, and the method of *ex ante* incremental value have been criticized. Geradin recognizes many strengths with the *Georgia-Pacific* framework but one of the potential pitfalls of using the factors to create a hypothetical negotiation in the FRAND context is the benchmarking of

offered rates.[191] According to Geradin, although *ex ante* rates are considered to prevent any opportunism by the patent holder, "there seems to be no convincing reason why licensors should be prohibited from charging higher rates ex post than ex ante" because licensing agreements *ex post* standardization may take into consideration the commercial potential of the technology and the market better.[192] Sidak, on the other hand, has strongly criticized particularly the *Microsoft v. Motorola* judgement and claims that the economic assumptions deployed in the ruling biased the FRAND royalty in favor of the infringer.[193] Sidak states that Judge Robart's analysis "exposes not only the legal and economic deficiencies of *Georgia-Pacific* in general, but also the problems inherent in converting that already deficient framework into an *ex ante* incremental value methodology for setting FRAND royalties".[194] Thus, Sidak argues predominantly two points: first, the poor suitability of the *Georgia-Pacific* factors to represent a hypothetical negotiation for FRAND royalties and, second, the insufficiency of incremental value of a patent to calculate the royalty for an SEP.[195] Furthermore, Sidak concludes that setting the hypothetical negotiation at the time of standard adoption fails to reward the SEP owner for its contribution to the standard and that Judge Robart's understanding of the *ex ante* incremental value of the SEP should not the basis for a FRAND royalty.[196]

Secondly, in addition to the hypothetical negotiations approach and the incremental value approach, the other methods applied in case law to determine and calculate fair, reasonable and non-discriminatory royalty rate have been also questioned. Layne-Farrar and Wong-Ervin provide an extensive analysis of the different calculation methodologies.[197] When it comes to choosing an appropriate base for FRAND royalty determinations, Layne-Farrar and Wong-Ervin point out that both approaches, the entire market value rule and the smallest saleable patent practicing unit, can be problematic; "[f]or multi-component products, calculating royalties on the entire product carries a risk that the patentee will be improperly compensated for non-infringing components of that products" while "for some technologies, using the SSPPU as the royalty base is likely to go too far and may undervalue the technology".[198] Furthermore, the different royalty calculation methods of top-down approach, bottom-up approach, and comparable licenses approach have received varying support from scholars.

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[191] *Geradin* (n 52) 952.
[192] *Ibid.*
[193] *Sidak* (n 60) 968.
[194] *Ibid.*
[195] *Ibid,* see: 968-975.
[196] *Ibid,* 1054.
[197] Anne Layne-Farrar and Koren W. Wong-Ervin, 'Methodologies for Calculating FRAND Damages: An Economic and Comparative Analysis of the Case Law from China, the European Union, India, and the United States' (2017) 8 Jindal Global Law Review 127-160.
[198] *Ibid,* 155-156.

Layne-Farrar and Wong-Ervin believe that the comparable licenses approach should be the main calculation method whenever possible as it typically provides the best evidence of market value[199] whereas Dhenne claims that "there is no miracle *in abstracto* approach that authorizes the calculation of FRAND royalties" and, therefore, the different calculation methods, instead of excluding one another, should complement and cross each other as much as possible[200].

Thirdly, limiting the right to seek injunctive relief in SEP infringement cases in order to balance the bargaining power between the patent holder and the implementer has been subject of debate that has divided academics; some supporting the limitation or even exclusion of such right while some strongly arguing against such limiting actions. Sidak believes that injunctions should not be limited in the SEP infringement cases and explains that, when it comes to the right to seek an injunction, the plausibility of the hold-up presumption is disputable – rather "a conjecture, not a real-world fact" – and that it has been confirmed by empirical evidence that patent holdup seldomly appears in practice.[201] Sidak claims further that "even if one accepts for the sake of argument that patent holdup could arise, there is no reason to assume that the SEP holder will use the right to an injunction as a tool to hold up the infringer" or "that the royalties negotiates under a threat of an injunction will be outside the FRAND range".[202] According to Sidak, there are also several possible risks relating to limiting the availability of injunctions against patent infringers: such limitation may, on the one hand, encourage the implementer to behave opportunistically during the licensing negotiations and, on the other hand, result in the inadequate compensation of the SEP owner.[203] Sidak points out that ultimately "[r]educing or eliminating the availability of injunctions for FRAND-committed SEPs would mean, on the margin, that fewer innovators would participate in SSOs" and that "[a] patent holder that is constrained in its royalty negotiations and cannot seek to enjoin an infringer derives materially less benefit from participating in an SSO".[204]

Despite of such differing opinions and criticism back and forth, the Institute of Electrical and Electronic Engineers (IEEE) – an SDO famously known for its Wi-Fi standard – took initiative in 2015 to update its Patent Policy in order to clarify certain issues surrounding SEP licensing, such as the identification of a royalty base and the right to seek injunctive relief. Firstly, Section 6.1 of the IEEE-SA Standards Board Bylaws[205] introduces a defined term of "Reasonable Rate" that means an appropriate compensation that excludes any value resulting

[199] *Ibid,* 150.
[200] *Dhenne* (x 181) 763-764.
[201] *Sidak* (n 37) 231.
[202] *Ibid,* 233-234.
[203] *Ibid,* 234-236.
[204] *Ibid,* 236.
[205] IEEE-SA Standards Board Bylaws, approved by the IEEE-SA Board of Governors: August 2020.

from the inclusion of the patent in a standard and contributes the value to the smallest saleable patent practicing unit – a method claimed to potentially harm innovation if treated as a general rule of apportionment rather than as an exception to specific cases. Secondly, Section 6.2 declares that the patent holder, under a letter of assurance, is prohibited to seek or enforce an interim or permanent injunction against an implementer based on SEP unless the implementer has failed to participate in or comply with an adjudication. Thus, the patent owner is deprived from its right to seek injunctive relief in the course of licensing negotiations regardless of how outrageous or willful the patent infringement by the implementer is. The updated policy has received much criticism, from policy makers to scholars and even leaders, expressing concerns of harmful effects essentially devaluating technology and depressing innovation and competition and resulted in many disadvantageous developments such challenges in standard development, Wi-Fi standard losing its quality approval as an American National Standard, and significant decline in FRAND commitments.[206]

Interpreting FRAND terms is not a straightforward task and this chapter together with the previous chapters have well demonstrated that there is no clear consensus among authorities or academics of how the purpose and intent behind FRAND should be applied in practice when the patent holder and the implementer are negotiating or litigating a fair, reasonable and non-discriminatory license. These challenges associated with SEP licensing on FRAND terms have, unsurprisingly, had many scholars question the nature of FRAND commitment; whether it is actually a workable and attainable solution to address the issues stemming from the licensing of standardized technology. Therefore, different alternatives have been proposed either to supplement and ultimately fix the shortcomings of FRAND or to replace FRAND commitment with new and allegedly improved solutions attempting to solve the problematic nature of SEP licensing. In order to answer the question of whether these proposed alternative models are actually any better in practice, the alternatives will be introduced next and analyzed from a legal and economic theoretical perspective. The analysis will aim to uncover the strengths and weaknesses of each alternative and the reasons why none of the proposals have been implemented widely.

5.2 Proposed Alternatives to Fix or Replace FRAND Terms

The complex but inherent nature of SEP licensing on FRAND terms, particularly the ambiguity of the notion of FRAND, has led scholars to propose different alternative additives or systems to improve SEP licensing. Some of the proposals attempt to fix the existing deficiencies of FRAND, for example, by introducing additional commitments to supplement FRAND

[206] See: David L. Cohen, 'The IEEE 2015 Patent Policy – A Natural Experiment in Devaluing Technology' (*Kidon IP*, 12 August 2019) <https://www.kidonip.com/standard-essential-patents/the-ieee-2015-patent-policy-a-natural-experiment-in-devaluing-technology/> accessed 1 May 2021.

commitment, whereas some proposals are intended to replace FRAND commitment in its entirety with an enhanced alternative that allegedly does not have the same downsides as FRAND terms have. For the sake of understanding whether that is, in fact, the case that FRAND commitment could be fixed or replaced and why such shift to a better and more workable option has not already taken place in the industry, considering the proposed alternatives more in-depth is necessary. The alternatives need to be analyzed from a theoretical perspective taking into consideration the legal and economic aspects of patent licensing in order to fully address whether such proposals actually provide an all-encompassing answer to most of the issues surrounding SEP licensing or whether, compared to FRAND terms, the current system is the best option available at the moment despite of its drawbacks. Thus, the analysis will concentrate on the following suggested solutions: binding arbitration, alternative remedy for injunctions, royalty free commitment, non-assertion commitment, *ex ante* licensing terms, and *ex ante* pseudo-pool approach.

5.2.1 Binding Arbitration

When it comes to any private commercial disagreements, alternative dispute resolution mechanisms have been more and more popular to settle disputes that would otherwise result in litigation. These informal non-litigation alternatives have, in fact, become an increasingly accepted way to solve intellectual property disputes due to the several alleged advantages and few limitations compared to the traditional legal system and courts. In particular, such dispute resolution methods have been seen as an attractive alternative because the processes are generally less expensive in overall costs, less time-consuming, but more private in nature. Hence, alternative dispute resolution often receives support as the settlement result is usually more satisfactory for both parties of the disagreement since they have the opportunity to directly participate in the process and to have more control over the result. Therefore, it does not come as a surprise that, in addition to the preferred approach of negotiation, other alternative dispute resolution mechanisms, namely mediation and arbitration, have been also advocated in the realm of SEP licensing on FRAND terms.

In the industry of standardized technologies, both mediation and arbitration are familiar practices to solve disagreements relating to SEP licensing. If the initial negotiations between the patent owner and the implementer fail, the parties can agree to voluntarily enter into mediation where an impartial person called ‘mediator’ works to bring the parties together and helps to reach a mutually acceptable resolution. However, although mediation sound like an appealing option to settle the discord between the parties with the help of a third party, it does have a major weakness – the reached resolution is not binding. Thus, mediation is effective only when both parties are motivated to cooperate and compromise in order solve the

disagreement and likewise respect the outcome of the mediation. Another aspect that makes mediation challenging in the SEP licensing context is that it becomes inevitably ineffective if there is an imbalance of power and the other party has a significant advantage over the other, which may be the case with the licensing of SEPs. For these reasons, binding arbitration has been usually considered as a better and safer alternative dispute resolution option since the decision by the 'arbitrator', a neutral person appointed by the selected arbitration institute to solve and decide a dispute after hearing arguments and evidence from each party, is accepted as a final outcome and the parties waive their right to a trial. In fact, the World Intellectual Property Organization (WIPO) has encouraged submissions and referrals of FRAND disputes to the WIPO Arbitration and Mediation Center to conclude a FRAND licensing agreement through alternative dispute resolution.[207]

Some academics have suggested that many of the complex issues currently surrounding SEP licensing negotiations and FRAND terms could be fixed, to some extent, by binding arbitration. Lemley and Shapiro believe that FRAND disputes could be solved by binding arbitration between the SEP holder and the implementer if the SSOs implement such an obligation to their IPR policies.[208] Thus, the FRAND commitment itself should be supplemented with a binding arbitration commitment. Lemley and Shapiro explain that "[u]nder our proposal, if a standard-essential patent owner and an implementer of the standard cannot agree on license terms, the patent owner is obligated to enter into binding arbitration to determine the FRAND royalty rate for its entire portfolio of standard-essential patents, so long as the implementer makes a reciprocal FRAND commitment for patents reading on the standard in question".[209] Lemley and Shapiro further describe that such approach aligns well with the interpretation that a FRAND commitment limits patent owner's right to seek injunctive relief against a willing licensee; "[if] the implementer refuses to make a reciprocal commitment or to submit to arbitration, the patent owner's FRAND commitment not to go to court to enforce its standard-essential patents against that party has been discharged".[210]

Regarding the arbitration procedure itself, Lemley and Shapiro advocate a "baseball-style" arbitration where both parties of the disagreement present arguments and evidence before the arbitrator and then propose a royalty rate that reflects FRAND terms; the arbitrator is not entitled to determine the royalty rate by itself but only required to pick one or the other based on the supporting argumentation and evidence provided by the parties. Lemley and Shapiro

[207] See: WIPO, *Guidance on WIPO FRAND Alternative Dispute Resolution (ADR)* (A Document by the WIPO Arbitration and Mediation Center, 2017).
[208] *Lemley* (n 3) 1136.
[209] *Ibid,* 1142.
[210] *Ibid,* 1142-1143.

claim that this type of "baseball-style arbitration logically drives the parties towards making reasonable proposals, because the party that asks for too much (or offers too little) risks losing the case altogether".[211] However, quite predictably, the paper upholds the US case law based approach in determining what a reasonable royalty should be – a royalty subject to *ex ante* hypothetical negotiation and *ex ante* incremental value of the patent – which has been questioned by other scholars. Nevertheless, Lemley and Shapiro strongly believe that most of the debate as well as the litigation surrounding the interpretation of FRAND terms is unnecessary if SSOs adopt best practices to prevent the current issues associated with SEP licensing: "[W]e think that the FRAND commitment should be understood to create a simple, binding commitment that allows the patent holders and willing licensees to resolve those difficult questions through baseball-style binding arbitration if they cannot come to terms on their own. Rarely will they need to go to court."[212]

Nevertheless, Lemley and Shapiro do identify some boundaries and complications relating to FRAND arbitration – "though fewer than one might expect".[213] One of the possible challenges is a situation where an unwilling patentee or an unwilling licensee tries to opt out of a binding arbitration commitment. Lemley and Shapiro explain that an unwilling patentee could be compelled to arbitration by a court due to the commitment made to an SSO but the situation with an unwilling licensee is trickier as it has not made such commitment. The risk of the implementer refusing to participate in the arbitration is, however, manageable as the patent owner has the right to sue and seek injunctive relief for infringing its patent which balances the power dynamics between the parties. Another challenge is the transfer of SEPs and particularly the issue of patent privateering where typically a patent owner transfers its patents to a patent assertion entity to use the patents to attack against other industry actors, namely competitors. Lemley and Shapiro point out that "this is a relatively easy problem for SSOs to solve with suitably crafted patent rules" that treat the FRAND commitment, together with the binding arbitration commitment, as an obligation that travels with the patent; "[w]hile we think patent and antitrust law would find their way to that if need be, the SSO could help matters along by making clear that a patentee's FRAND commitments bind not only itself but also its successors".[214]

Larouche et al. criticize Lemley and Shapiro's binding arbitration approach, claiming that a baseball-style binding arbitration commitment is only "a solution in search of a problem" and

[211] *Ibid,* 1144.
[212] *Ibid,* 1166.
[213] *Ibid,* 1152-1161.
[214] *Ibid,* 1159.

does not effectively address the issues of SEP licensing and standardization.[215] Firstly, based on economic theory, Larouche et al. assert that binding arbitration will have a "chilling effect" on the negotiations themselves because "if there is no uncertainty or, even if there is some uncertainty on the award, but the parties are risk friendly or unduly optimistic about the outcome of the arbitration process, the parties are less likely to reach a negotiated agreement and will always rely on arbitration or litigation".[216] Furthermore, the paper points out that some empirical studies have found, contrary to Lemley and Shapiro's claim, that a baseball-style arbitration does not actually result in such low dispute rates and high settlement rate as expected.[217] Secondly, Larouche et al. argue that the proposed binding arbitration will ultimately lead to resolutions that undercompensate the SEP owners, especially if each arbitration outcome is disclosed to all potential willing licensees as suggested by Lemley and Shapiro – "Such disclosure is bound to have an impact on all future arbitrations. If the current arbitration is resolved in favor of the implementer and the royalty rate is too low, so will be the royalty rates decided in subsequent arbitrations and negotiations."[218] The result will be a lack of balance that disincentivizes innovation and harms standardization efforts.

Larouche et al. insist further that, based on existing economic theory and evidence, the binding arbitration proposal by Lemley and Shapiro does not necessarily motivate the SEP holder and the implementer to work toward a reasonable royalty and, therefore, it "does not lead to more convergence (and less uncertainty) than existing dispute resolution mechanisms".[219] Hence, all these different considerations lead Larouche et al. to conclude that there is not truth behind Lemley and Shapiro's claim that a baseball-style binding arbitration is a simple and efficient solution to the issues surrounding SEP licensing on FRAND terms. Larouche et al. proclaim that, in fact, the real effects of binding arbitration – undercompensation of SEP owners, discouragement of convergence and chilling effect on negotiations – render FRAND ineffective. Thus, Larouche et al. approach the matter from the viewpoint that Lemley and Shapiro's proposal to fix the process of solving FRAND licensing disputes is unnecessary since the process is not broken in the first place; "[a]ll of these factors, at a minimum, raise questions whether the mandatory arbitration proposed by Professors Lemley and Shapiro stands any chance to more efficiently or effectively resolve FRAND disputes as compared to existing dispute resolution avenues, including litigation, voluntary party-defined arbitration, or other means".[220] In my opinion, although the binding arbitration commitment proposed by Lemley

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[215] Pierre Larouche, Jorge Padilla, et al., *Settling FRAND Disputes: Is Mandatory Arbitration a Reasonable and Non-Discriminatory Alternative?* (Tilburg Law School Legal Studies Research Paper Series No. 023/2013, Hoover IP2 Working Paper Series No. 13003), 5.
[216] *Ibid,* 19.
[217] *Ibid,* 20-21.
[218] *Ibid,* 25.
[219] *Ibid,* 27-28.
[220] *Ibid,* 32.

and Shapiro seems at first glance to be a rather reasonable remedy to fix the current FRAND licensing system to some extent, Larouche et al. do make a case that, in fact, such proposal does not necessarily address the issues of SEP licensing and standardization in a satisfactory manner. That being said, bilateral commercial arbitration between the SEP holder and the implementer is, in my opinion, a very advantageous alternative dispute resolution method to litigation if both parties are willing, but Lemley and Shapiro's proposal of a baseball-style binding arbitration commitment at the SSO level does appear as an unnecessary measure.

5.2.2 Alternative Remedy for Injunctions

As noted in the previous chapters, the patent owner's legal right to seek injunctive relief against the implementer in the case of a SEP infringement is a challenging matter that has not only divided opinions among scholars but also ways to approach the issue by courts and competition authorities in different jurisdictions. Although subject of opposition, judicial authorities in the US and the EU have resolved the issue of whether injunctions are compatible with the FRAND commitment by restricting the possibility to seek injunctions due to the concerns of anti-competitive behavior, namely the risk of patent hold-up. However, many academics have claimed that flip side of the coin, when limiting the use of injunctions, is patent hold-out; the absence of injunctions enables the implementer to use anti-competitive tactics to either ignore the patent or to pay an unfairly low royalty. For these reasons, Nikolic considers another alternative procedural remedy that could restore the balance between the differing interests of the patent holder and the implementer in course of licensing disagreements.[221]

Nikolic recognizes patent hold-out to be a legitimate concern resulting from the limitation of injunctions and, therefore, it should be mitigated with alternative remedies essentially built on two grounds: "(i) to make [patent hold-out] practices more costly for implementers and (ii) to provide incentives for dispute resolution".[222] Hence, Nikolic proposes an alternative to injunctions – interim payments – to restore the balance between the parties. Nikolic explains that an interim payment, that is, a security payment made into escrow account by the implementer, ordered by a court for the favor of the SEP owner due to a patent infringement would make hold-out strategies more costly and eliminate the need for injunctions.[223] Such an interim payment is an efficient remedy, according to Nikolic, if it is set at the very beginning of the proceedings through a special hearing dedicated to setting and calculating the amount of security and if the calculation itself follows certain principles: the security should reflect the patent owner's whole SEP portfolio related to the standard as it follows commercial practices,

[221] *Nikolic* (n 4) 126-135.
[222] *Ibid,* 132.
[223] *Ibid.*

both parties' FRAND offers should serve as a range of upper and lower limits, comparable prior licensing agreements and evidence of *prima facie* infringement could be also taken into account, and the negotiation history as well as the willingness of both parties should serve as useful indicators.[224] There are, however, some challenges relating to interim payments identified by Nikolic. Firstly, this type of legal remedy is not available in some legal systems; "[t]his will probably be the case in civil law systems, which typically do not give courts discretion in crafting interim procedural remedies".[225] Secondly, interim payments can increase the costs of SEP litigation, "incentivizing patent assertion entities [...] to assert 'low quality' SEPs with the aim of extracting a favorable settlement".[226]

This interim payment proposal by Nikolic resembles the *Huawei v. ZTE* decision by the CJEU in which the court decided that if an SEP is used by the implementer before it has concluded a license agreement with the patent owner, the implementer is required to provide an appropriate security from the moment its counteroffer is rejected. Nikolic argues that the judgement places the determination of appropriate security at a later point in time which is ineffective compared to his proposal of holding special hearing for the interim payment purposes at the beginning of the proceedings; "[p]ostponing the assessment of the implementer's obligation to provide appropriate security does not provide an appropriate safeguard for SEP owners against hold-out". The proposal of interim payments by Nikolic is, in my opinion, a reasonable one but perhaps unnecessary, particularly in the EU due to the *Huawei v. ZTE* judgement, which has clarified the use of injunctions in SEP licensing cases. Hence, injunctive relief is not absent, the patent holder is entitled to seek an injunction against an unwilling licensee. Although I do agree with Nikolic that patent hold-out is a risk that should be taken into consideration when limiting the patent holder's right to seek injunctive relief, I do not necessarily endorse an option that has the potential to make the process highly costly for the implementer. Hence, such alternative could ultimately hamper one of the fundamental purposes of FRAND terms, ensuring and promoting the wide adoption of standards.

5.2.3 Royalty-Free Commitment

Interestingly, FRAND commitment is not the only method used to address and alleviate competition concerns resulting from SEP licensing. Some SSOs, for example, the World Wide Web Consortium (W3C) setting standards to ensure the growth of Internet, have IPR policies that require the SEP owner to license its patent royalty-free. For instance, § 5 of the W3C Patent Policy states that a W3C Royalty-Free license may not be conditioned on payment of

[224] *Ibid,* 132-134.
[225] *Ibid,* 134.
[226] *Ibid.*

royalties, fees or other consideration.[227] This type of SEP licensing model is called royalty-free commitment in which the patent owner commits to license its patent free of charge instead of committing to fair, reasonable and non-discriminatory licensing terms. Thus, royalty-free licensing is seen as an alternative way to license SEPs compared to FRAND commitment. Bekkers and Updegrove bring up that as to the royalty-free commitment imposed by the W3C, a culture of free license rights for web infrastructure settled down already in the early phase of the development of the Internet and that W3C has defended their royalty-free patent policy by arguing that "[t]he Web is basic infrastructure, at global scale, that relies on the broadest distribution possible of its technologies and specifications" and "[r]oyalty-free standards set low IP and no cost barriers to universally interoperable implementation and use, making them a good fit with the globally distributed, permission-free nature of the Web".[228]

Although the preference of royalty-free licensing and considering standards almost as public goods has turned out to be beneficial for Web technology and "has likely contributed to the relatively low level of patent litigation relating to Internet standards in comparison with Network standards"[229], the approach has been nevertheless seen more suitable for specific technology areas, such as the Internet. Hence, many academics have been reluctant to consider royalty-free commitment as a viable solution when it comes to, for instance, the telecommunication standards because of the lack of innovation incentive. Bekkers and West point out well that "[s]uch a policy has not been successfully implemented for standards (such as mobile telecommunications) where participants have heavily invested in R&D and that see licensing income [...] as an essential part of their business strategy".[230] Hence, royalty-free licensing is not necessarily a practical solution by SSOs to address competition concerns of SEP licensing if the side effect of such policy is the patent owner's unwillingness to license its patents and to invest in research and development in standards.

Other academics agree. Contreras states that "[t]he obvious trade-off of royalty-free requirements is that patent holders seeking a financial return on their patent portfolios may not wish to participate in such SSOs, thereby depriving such SSOs of skilled developers, technology inputs and exposing implementers of SSO standards to infringement of these

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[227] W3C Patent Policy, 15 September 2020 <https://www.w3.org/Consortium/Patent-Policy-20200915/#sec-Requirements> accessed 13 May 2021.
[228] Rudi Bekkers and Andrew Updegrove, *A Study of IPR Policies and Practices of a Representative Group of Standards Setting Organizations Worldwide* (Commissioned by the US National Academics of Science, Board of Science, Technology, and Economic Policy (STEP), Project on Intellectual Property Management in standard-setting processes, 2012), 21.
[229] Jorge L. Contreras, 'A Tale of Two Layers: Patents, Standardization, and the Internet' (2016) Denver Law Review 853, 879.
[230] Rudi Bekkers and Joel West, 'The Limits to IPR Standardization Policies as Evidenced by Strategic Patenting in UMTS' (2009) 33 Telecommunications Policy 80, 94.

patents without even the cold comfort of a FRAND licensing commitment".[231] Similarly Webb argues that the model of royalty free licensing, "though clear simple, and attractive from an antitrust perspective, is anathema to the IP community" since such licensing "provides no incentive for creation and may well act as a disincentive to participation in a standard-setting organization" as the patent owner is not entitled to any royalty income.[232] In addition, De Vellis claims further that royalty-free licensing will stifle technology and reduce network benefits and, therefore, De Vellis advocates licensing on FRAND terms instead.[233]

I have to agree with the arguments asserted above. In my opinion, it is clear that such royalty-free commitment does not work with certain standards that require substantial and costly research and development by patent holding companies, for instance, in the telecommunications industry, and that the royalty-free licensing conflicts with one of the mandating economic theories behind the current FRAND commitment – the patent holders would not receive appropriate rewards for their investments. Therefore, I believe that such royalty-fee system would actually harm the standardization system, ultimately discouraging innovation and standardization. However, Rysman and Simcoe have proposed a modified version of royalty-free licensing to replace the current method of licensing SEPs on FRAND terms: Non-Assertion After Specified Time (NAAST).[234] The model proposed by Simcoe and Rysman is, in my opinion, quite interesting and seemingly novel since it proposes a royalty-free commitment – or rather a non-assertion commitment – after a specified time, but the model and its strengths and weaknesses will be analyzed more in detail in the next part, after introducing the concept of non-assertion commitment.

5.2.4 Non-Assertion Commitment

Another method that some SSOs have implemented in their IPR policies in order to mitigate competition concerns, although more uncommon than royalty-free licensing, is a non-assertion commitment. Such non-assertion commitment in the context of SEP licensing means that the SEP holder commits not seek to enforce its patent against any implementer that has implemented the standardized technology in its products. For instance, the IPR Policy of the Organization for the Advancement of Structured Information Standards (OASIS)[235]

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[231] Jorge L. Contreras, 'Technical Standards, Standards-Setting Organizations and Intellectual Property: A Survey of the Literature (with an Emphasis on Empirical Approaches)' (2017) Utah Law Faculty Scholarship 1, 36.
[232] Robert M. Webb, 'There Is a Better Way: It's Time to Overhaul the Model for Participation in Private Standard-Setting' (2004) 12 Journal of Intellectual Property Law 163, 203-204.
[233] James C. De Vellis, 'Patenting Industry Standards: Balancing the Rights of Patent Holders with the Need for Industry-Wide Standards' (2003) 31 AIPLA Quarterly Journal 301, 351.
[234] *Rysman* (n 5) 1010-1017.
[235] Intellectual Property Rights (IPR) Policy of OASIS, approved 07/31/2013 <https://www.oasis-open.org/policies-guidelines/ipr/> accessed 15 May 2021.

provides its technical committees with three commitment options to choose from, one of the options being a non-assertion covenant. Section 10.3. of the OASIS IPR Policy states that each obligated party covenants that it will not assert any of its essential patents against an OASIS party or third party for making, having made, using, marketing, importing, offering to sell, selling, and otherwise distributing products that implement an OASIS standard. In its essence, non-assertion commitment is "equivalent to conditional promises of royalty-free licensing, i.e. a pledge not to charge licensing fees for essential [patents] provided that other firms also do likewise".[236] But likewise with the non-assertion commitment as with the royalty-free commitment, it is seen especially beneficial in certain industries, for example, when it comes to promoting open standards. Thus, non-assertion covenant has similar weaknesses; it fits poorly such standardized technology industries that rely on vast investments in research and development and standardization.

Nevertheless, when it comes to SEP royalty rates, Rysman and Simcoe believe a modified version of non-assertion covenant to be a noteworthy alternative to replace the current practice of FRAND commitment. Rysman and Simcoe's study identifies several practical difficulties of determining a fair, reasonable and non-discriminatory royalty, mainly due to the vague and ambiguous nature of FRAND, which make the FRAND commitment arguably an unworkable solution to SEP licensing. For this reason, Rysman and Simcoe claim that the notion of FRAND in royalty determinations should be abandoned and replaced with an alternative that is based on a patent system solution: granting the patent holder a temporary monopoly.[237] The policy of non-assertion after specified time is proposed; under such policy, the SEP owners would commit to a non-assertion covenant after a specific period defined by the SSO, but during that period they are entitled to collect as much royalty as possible for any of their standardized technology. Thus, once the time period terminates, the implementers can trust that their products implementing such standardized technology will not face an infringement suit. Rysman and Simcoe explains that this approach is reasonable as it "mimics the underlying patent system that rewards inventors with monopoly rights for a limited time" – a feature of the patent system that has not been largely a subject of criticism.[238]

Rysman and Simcoe claim the NAAST policy to have one major strength that overrides the possible more minor issues and, all things considered, NAAST is an attainable solution to fix licensing of SEPs. Hence, the major virtue of NAAST, according to Rysman and Simcoe, is the simplicity of adjudication; "[c]ourts need to determine whether an assertion date has passed, not whether a royalty rate is reasonable".[239] This is very much a "hands-off approach" to

[236] *Bekkers* (n 230) 94.
[237] *Rysman* (n 5) 1014.
[238] *Ibid,* 1015.
[239] *Ibid.*

royalty determinations which would allegedly solve many current problems surrounding SEP licensing.[240] However, there are few considerations relating to the NAAST policy that Rysman and Simcoe's study recognizes to be somewhat challenging but does not necessarily provide a clear solution, rather leaving the decision making power to SSOs. The first obvious consideration of NAAST is the length of the assertion period: "This paper does not take a position on what the time period should be. However, one might reasonably expect SSOs to choose a period that lasts several years, but is substantially less than the duration of the underlying patents."[241] Rysman and Simcoe give a five-year period as an example but essentially move the task of identifying a reasonable assertion period to SSOs, suggesting that the economic literature provides some guidance on the matter. Another consideration left for the SSOs to specify is the selection of starting date for the assertion period, basically either from the beginning or the end of standard-setting process.[242]

In my opinion, the alternative solution of non-assertion after specified time by Rysman and Simcoe is an interesting and seemingly novel idea attempting to repair many of the problems surrounding SEP licensing on FRAND terms. I have to agree that eliminating the complex issue of royalty determination is a major strength of their proposal since it has turned out to be a challenging task for the courts under the policy of FRAND terms, as noted in the previous chapter. However, I am not totally convinced whether the NAAST policy would work as well in practice as described by Rysman and Simcoe. Firstly, I am hesitant whether SSOs would be willing to adopt such policy if they are left with the task of deciding and specifying a specific length and starting date for the assertion period. My opinion is based just on the fact that SSOs have not taken any actions so far on clarifying FRAND commitment either as they consider the licensing activities to be a commercial matter belonging outside the environment of standard-setting. Secondly, I am concerned whether such non-assertion covenant after specified time actually satisfies the same legal and economic approaches that are considered as the main purpose of FRAND terms: promoting the wide adoption of standards and ensuring the appropriate rewards for the patent holders for their investments in research and development in standards. In fact, I believe that the policy could do the opposite. The assertion time, in which the SEP holder is entitled to collect royalties freely, can hinder the implementer's chances to legally produce products complying the standard due to the considerable royalties but, at the same time, the patent owner can be undercompensated if the assertion period is too short.

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[240] *Ibid.*
[241] *Ibid.*
[242] *Ibid.*

Furthermore, Rysman and Simcoe argue that "useful standards generate large gains from trade, which should lead to rapid agreements" and claim further that under NAAST, for instance, if the SEP owners auction off the right to gain early access to standardized technology, the winners of such auction are most likely willing to pay substantial royalties to the patent owners due to the "first-mover advantages" often exhibited by the network markets; "[s]uch high payments should allow SSOs to keep the assertion period relatively short".[243] Again, I am skeptical whether the case is so straightforward, it should not be taken for granted that owning an SEP automatically equals with substantial profits. As a matter fact, I rather believe that a short assertion period would encourage implementers to stall with the implementation of standardized technology, leaving the SEP owner undercompensated or even uncompensated and the consumers waiting for standard-compliant products, which does not support innovation and growth in the industry. Also, high royalties during the assertion period could result in situations where the implementers are willing to gamble with the risk of an infringement lawsuit instead of paying royalties on a voluntary basis. However, Rysman and Simcoe consider such concerns rare because of the advantages of new opportunities and being the first vendor in a new market[244] – a reasoning that is, in my opinion, too shallow.

Be that as it may, I appreciate that Rysman and Simcoe recognize that their proposal is not perfect and that there are other possible objections as well against the NAAST policy, mainly relating to situations where the SEP holders might attempt to extend the assertion period by acquiring new patents that build on their essential patents or where a strict NAAST policy may even cause some actors not wanting to participate in the standard setting process due to such non-assertion covenant commitment. However, the study's argumentation against such objections is more or less on the level of "[w]hile NAAST does not address this issue, neither do RAND policies" or "NAAST is no worse than RAND"[245] which, in my opinion, is a standpoint that falls short. Thus, the NAAST commitment proposed by Rysman and Simcoe is noteworthy only for its great benefit of being straightforward and simple to adjudicate, but otherwise it does not appear to be significantly more attractive or workable option compared to the FRAND commitment – indeed, it seems that NAAST has some major deficiencies. The ultimate cost of the NAAST policy can be its discouraging effect on innovation and standardization and, for that reason, the commitment of non-assertion after specified time is not, in my opinion, an adequate alternative to replace FRAND terms.

[243] *Ibid.*
[244] *Ibid.*
[245] *Ibid,* 1016.

5.2.5 Ex Ante Licensing Terms

Many scholars advocate discussions of licensing terms in SSOs before standard-setting as a remedy to SEP licensing on FRAND terms – an exercise that has been also considered by some SSOs. Such *ex ante* licensing terms are seen particularly beneficial because open discussions on royalty terms as well as other licensing terms and conditions enable SSOs to consider technological merits together with price before declaring a particular patent to be essential to a standard. For instance, Lemley proposes that one solution that might fix the flawed system of SEP licensing is "*ex ante* RAND", that is, the requirement of patent holders to specify the content of their licenses before the standard is adopted, because such disclosure would allow SSOs to know what the true cost of a standard is before they decide to set such standard.[246] Similarly Torti explains further that such *ex ante* disclosure has undoubtedly several advantages; in addition to SSOs being able to consider both the technical merits and costs, it gives prospective licensees more certainties about the licensing terms and, therefore, overcomes many risks related to the FRAND model.[247] Lemley, however, claims the following: "SSOs hate [*ex ante* licensing terms] because they are largely composed of technologists who just want to get on with the business of choosing a technical standard and don't want to be bothered with how much it is going to cost in the long run. But their employers are going to be bothered, and they are much better off being bothered ex ante rather than ex post."[248]

The alternative of e*x ante* licensing terms has, however, received criticism. Lemley, together with Shapiro, has later noted that, although discussions in SSOs before a standard is adopted are not discouraged, such *ex ante* licensing discussions "are often difficult or infeasible, in part because not all of the parties with an interest in deploying a standard belong to the SSO".[249] Furthermore, Sidak describes that there are certain clear antitrust risks relating to discussions of *ex ante* licensing terms that can harm competition; such disclosure of licensing terms and maximum royalty rates can put the patent holder in a position where it has little or no market power while the SSO members who are prospective licensees can be oligopsonists possessing more market power.[250] Despite of such antitrust risks identified by Sidak, competition authorities in both the US and EU have generally accepted *ex ante* discussions of licensing terms, claiming that such consideration can be procompetitive. According to a report issued by the US Department of Justice and the Federal Trade Commission in 2007, the US agencies

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[246] Mark A. Lemley, 'Ten Things to Do About Patent Holdup of Standards (and One Not to)' (2007) 48 Boston College Law Review 149, 158.
[247] Valerio Torti, 'IPRs, Competition and Standard Setting: in Search of a Model to Address Hold-Up' (2012) 9 European Competition Law Review 1, 4.
[248] *Lemley* (n 246), 158.
[249] *Lemley* (n 3), 1138.
[250] J. Gregory Sidak, 'Patent Holdup and Oligopsonistic Collusion in Standard-Setting Organizations' (2009) 5 Journal of Competition Law & Economics 123, 167 and 188.

should not take position as to whether SSOs should engage in joint *ex ante* discussion of licensing terms but such discussion is unlikely to constitute an antitrust violation and the agencies should apply the rule of reason, that is, whether restraint is likely to have anticompetitive effects and diminish competition, when evaluating such joint activities – "*ex ante* negotiations of licensing terms are most likely to be reasonable when the adoption of a standard will create or enhance market power for a patent holder".[251] The EU Guidelines on the applicability of Article 101 TFEU takes the same approach, stating that standard-setting agreements providing for *ex ante* disclosures of most restrictive licensing terms, including the maximum royalty rates, will not, in principle, restrict competition within the meaning of Article 101(1); "[s]uch unilateral ex ante disclosures of most restrictive licensing terms would be one way to enable the [SSO] to take an informed decision based on the disadvantages and advantages of different alternative technologies, not only from a technical perspective but also from a pricing perspective".[252]

In addition to the impracticality and antitrust risks, *ex ante* negotiation of licensing terms in SSOs have been criticized from an economic perspective as well, that such disclosure can be detrimental for one of the backbones of FRAND terms. Hence, although it is clear that such disclosure would ensure the availability of technological solutions essential to a standard, it is uncertain whether it would ensure the appropriate rewards for the patent holders for their investments in research and development. Gilbert has heightened this matter: "Joint negotiation raises concerns that members of an SSO may engage in a different type of holdup. In particular, joint negotiation may create opportunities for potential licensees to exercise buyer market power, and suppress royalty terms ex ante, but after rights holders have made irreversible research and development investments necessary to create and patent technologies that essential to a standard."[253] Similarly, Bekkers and West have pointed out that research and development intensive companies, the patent owners, have not supported such *ex ante* licensing terms, "arguing that market size and other uncertainties make it impossible to commit to certain conditions at the initial phase of standards development".[254] Taking into consideration the legal and economic approaches guiding the interpretation of SEP licensing on FRAND terms, I have to agree with the opposing academics and their arguments against *ex ante* licensing terms. Such disclosure of most restrictive licensing terms and royalty rates before standard-setting seems to be an unfair arrangement for the patent

[251] US Department of Justice and the Federal Trade Commission, *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition* (2007) 7-8.
[252] Communication from the Commission – Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (Text with EEA relevance) [2011] OJ C 11/1, para 299.
[253] *Gilbert* (n 74) 856.
[254] *Bekkers* (n 230) 95.

owner due to the imbalance of bargaining power between the patent owner and the prospective licensee. Thus, the possible undercompensation of patent holder for its investments will discourage innovation and participation in standardization and, therefore, it is difficult for me to consider the alternative of *ex ante* licensing terms as a feasible option to fix FRAND commitment.

5.2.6 Ex Ante Pseudo-Pool Approach

Interestingly, Contreras has suggested an alternative – a "pseudo-pool" approach – to supplement SEP licensing on FRAND terms at the SSO level in order to fix most of the problems and uncertainty surrounding standards.[255] Contreras' approach is based on the *ex ante* determination of aggregate royalty rates for different standards and pooling strategies but adopted in the SSO level – therefore, referred to as "pseudo-pool" proposal. Patent pools are agreed structures between multiple patent owners in which they agree to license their patents to one another or to third parties on a single collective royalty. They are not an unfamiliar arrangement in the industry of standardized technologies, for example, with 3G telecommunication technologies, because patent pools guarantee a certain aggregate royalty burden of standardized technology that both the patent owners and the implementers can rely on. Contreras points out that the number of patent pools in connection with standards is, however, relatively small, "most likely because they require high start-up costs and extensive planning".[256] Therefore, Contreras' proposal of pseudo-pools is designed to the existing framework of SSOs to avoid such investments that are usually required to create patent pools. Contreras claims that the several beneficial features of patent pools can reduce the existing uncertainty of SEP licensing on FRAND terms if such pseudo-pool approach incorporates certain components: declaration of SEPs and FRAND commitment, aggregate royalty determination, licensing of SEPs, allocating the aggregate royalty, over-declaration penalty, independent licensing permitted, and opting out.[257]

The first step of Contreras' model is already well-known: the patent holders must declare their SEPs on a standard and commit to FRAND terms. The second component, on the other hand, requires SSOs to establish an aggregate royalty for that particular standard, prior to or shortly after the final approval of the standard, that is divided among all the patent holders of such SEPs. Contreras specifies that the aggregate royalty must be reasonable, "taking into account the expected overall market for standardized products, historical royalty rates in the industry, typical product price ranges, and the like".[258] In the third phase, that is, licensing of SEPs, each

[255] *Contreras* (n 6).
[256] *Ibid,* 54.
[257] *Ibid,* 78-79.
[258] *Ibid,* 79.

patent holder either negotiates the license agreement with the potential licensee or SSOs may provide a uniform agreement to be used. According to Contreras, one important feature of the pseudo-pool approach is that the aggregate royalty would be due even if the implementer licensed only one patent from the pool and that the SEP holders would be entitled to a share in the aggregate royalty paid by the implementer only if they have granted a license to it.[259] The intent behind such rule is to encourage the implementers to take licenses, as the royalty due will not increase, and to encourage the patent holders to grant licenses, as otherwise they would not benefit from the aggregate royalty paid by the implementers. The fourth component defines how the aggregate royalty is allocated to patent holders; Contreras suggests a simple numeric proportionality, such as patent holder's share equals the number of patents that it holds divided by the total number of patents in the pool, since it is an efficient and administrable method to allocate "rough justice".[260]

The next component of Contreras' pseudo-pool model is over-declaration penalty, that is, a SSO established procedure to deter the possible problem of over-declaration of SEPs. Thus, the procedure would allow anyone to challenge the essentiality of a declared patent and if an SEP is determined as non-essential to the standard in question, an over-declaration penalty will be imposed on the patent owner which means that the patent owner's share of the aggregate royalty will be reduced. Contreras describes that this type of incentive structure is hoped to regulate patent disclosure appropriately and result in greater discipline in disclosure.[261] The sixth element of Contreras' approach permits the parties to license their SEPs outside the SSO patent pool structure in order to have some flexibility in the system, for instance, if a prospective licensee wishes to license both SEPs and other patents from a patent owner. However, Contreras clarifies that "this option would not eliminate a patent holder's obligation to offer licenses to SEPs under the pseudo-pool structure, and all SEP holders will be required to do so whether or not they also offer licenses outside the pseudo-pool structure".[262] Lastly, the pseudo-pool approach comes with an opt-out option for patent holders that are not willing to license their patents and, therefore, do not participate in the pseudo-pool system: a binding non-assertion covenant for the benefit of all implementers. But if the patent owner changes its mind and wants to opt-in, that is, license its SEPs on FRAND terms, it may provide the SSO with a written notice of revocation of the covenant. Contreras clarifies that "[f]ollowing such an opt-in notice, the opting-in patent holder's SEPs would be counted in the "denominator" for the purposes of allocating future royalties among SEP

[259] *Ibid,* 81.
[260] *Ibid,* 81-82.
[261] *Ibid,* 82.
[262] *Ibid,* 83.

holders, and the opting-in SEP holder would be required to negotiate FRAND licenses with vendors implementing the standard".[263]

Although the alternative approach of pseudo-pool is worth considering as a possible way to fix some of the existing issues with FRAND commitment, Contreras recognizes well that there are some potential concerns relating to his proposal. Contreras notes that, although the idea of an aggregate cap on SEP royalties is not new, it has barely been adopted by SSOs for two main reasons: possible anticompetitive behavior and potential rejection by the patent holders. Firstly, patent pools have been, in general, subject of discussions from a legal and economic perspective since such arrangements may have both positive and negative effects on competition. On the one hand, patent pools may reduce transaction costs relating to the production of products but, on the other hand, patent pools may result in anti-competitive behavior. In the case of Contreras' pseudo-pool approach, such pooled patents of standardized technology in the SSO level do resemble a cartel which precludes price competition in total. However, Contreras purports that his proposed procedure used to establish the aggregate royalty allows negotiation and price competition because "patent holders who participate in this negotiation will be free to make their case for the inclusion of their patented technology, and others will be free to consider whether or not the proposed addition to the addition to the [a]ggregate [r]oyalty justifies inclusion".[264] Secondly, Contreras notes that "[s]ome commentators warn that changes to the standards-development system that tend to decrease the financial return that can be realized by patent holders may cause those patent holders to defect from the system, thus weakening the system and resulting in the production of fewer economically valuable standards".[265] Nevertheless, Contreras claims that this type of flight risk does not necessarily truly exist because the benefits of participating in standardization ultimately outweigh the reduces in profit and royalty revenue.[266]

The two main potential concerns relating to Contreras' pseudo-pool approach are, in my opinion, reasonable. The first risk of antitrust liability of joint aggregate royalty negotiation can be problematic from a competition law perspective because a patent pool is an agreement of cooperation amongst competitors. However, in my opinion, the second risk of patent holders fleeing the system due to decreased royalties can become even more detrimental aspect for the pseudo-pool approach since such system may not satisfy the one of the main economic purposes behind current FRAND commitment, that is, ensuring appropriate compensation for the patent holders for their investments in research and development in standards. Hence, when the SSO is solely responsible for establishing the aggregate royalty for

[263] *Ibid.*
[264] *Ibid,* 89.
[265] *Ibid,* 90.
[266] *Ibid,* 91.

the pooled patents, there is a risk that the SSO ends up determining a royalty that eventually undercompensates the patent holders, even though the aggregate royalty would be based on different factors such as the market, historical royalty rates and product price ranges. As seen in the previous chapter, royalty determination has not been simple or easy for the courts and, therefore, establishing an aggregate royalty for a patent pool would not presumably be a straightforward task for SSOs either. In addition, I have a more practical doubt that the SSOs may not be overly excited to adopt such pseudo-pool system because the costs and endeavors needed for such arrangement as well as the task of aggregate royalty determination would fall for the SSOs. For these reasons, I am afraid that Contreras' pseudo-pool approach does not have enough potential to fix the current inefficiencies of SEP licensing on FRAND terms.

5.3 Improving the Current System of FRAND Terms

The challenging and complicated nature of SEP licensing is irrefutable and has therefore led scholars to propose different alternatives to either fix or replace the current system of FRAND commitment. As seen above, some of the proposed alternatives attempt to repair the existing deficiencies of FRAND whereas some are intended to replace the commitment in its entirety with a new system that allegedly does not have the same shortcomings as FRAND commitment. Although all the covered alternatives have some clear strengths and benefits, both a theoretical legal and economic analysis as well as opposing arguments by other academics revealed some major flaws in each proposal. It seems that currently there is no straightforward solution that would magically solve all the issues surrounding SEP licensing. Another attestation of such finding is that a shift to these allegedly better and more workable options has not taken place in the standardization industry. Hence, one could argue that the proposed alternatives do not provide a pivotal answer or solution to the issues currently surrounding SEP licensing and, in fact, the current system of FRAND commitment seems to be the best option available at the moment despite of its drawbacks. The outcome of the current system, that is, the rapidly developing and growing interconnected world of networks and connective devices due to successful and prospective collaborations between the industry actors, also support this claim – I would actually argue that the standardized industry is not doing a bad job at all, even if there are some bumps in the road.

This position has been supported by other scholars as well. Larouche et al. claim that the process for resolving FRAND licensing disputes is not broken and that there have been thousands of successful license negotiations involving FRAND-committed SEPs, explaining that "the current system of voluntary, consensus-based standardization works, and strives to keep two competing interests in balance: the need to allow implementers to profitably incorporate the standard into their products and thereby promote standardization and the

need to adequately compensate SEP owners for their investment and success at innovation".[267] Similarly Geradin and Rato note that the "SSOs' preference for a flexible system of fair, reasonable and non-discriminatory licensing of [patents] essential to a standard appears to be justified" and, consequently, the current IPR policies of SSOs have largely been successful, allowing SEP owners and implementers to reach mutually satisfactory license agreements and enabling standardization activities in different technology fields. Nevertheless, Geradin and Rato well point out that this does not mean that the model of FRAND commitment is or will be completely trouble-free: "Friction and even outright hostility can be expected to arise where companies must remunerate IPR owners for their use of those rights. There is a sort of love and hate relationship between innovators (licensors) and implementers (licensees)."[268]

As mentioned above, I agree with the viewpoint that, despite of the many perceived problems with licensing of FRAND-encumbered SEPs, the current system allowing certain flexibility in the standardization industry is the best option available at present and it has worked in most cases. That being said, I am very much aware of the inherent fragilities of the FRAND commitment and the increases in litigation rates; the system is not perfect or flawless and the concerns expressed by the parties of the licensing negotiations, other industry actors and academics appear as legitimate. Hence, reshaping the practice might be necessary if a viable option for that purpose is discovered. However, after exploring the different proposed alternative models and their strengths and weaknesses, it is rather difficult to consider any of the alternatives as a feasible option to fix or replace the FRAND model. In my opinion, the FRAND system is not defective in a way that it would require significant "fixing" but rather clarification on how to interpret FRAND terms and balance between the conflicting interests of the SEP holder and the implementer as well as the interests of the SSOs and the underlying legal and economic considerations behind the commitment. Such improvements could be achieved with common policies and frameworks set at the public level but, at the same time, leaving the right to freely negotiate the license agreements to the SEP owners and implementers. Thus, I believe that, in order to ensure predictability and certainty of SEP licensing in future, the current system could be improved if the FRAND commitment had an actual meaning to both parties.

A policy report '*Licensing Terms of Standard Essential Patents – A Comprehensive Analysis of Cases*' prepared by the Joint Research Center of the European Commission in 2017 provides a public policy analysis that seems to be a reasonable proposition for future motions relating to SEP licensing, a proposition that I feel comfortable advocating. Firstly, the report states that FRAND is not a regulatory instrument that should be understood as a specific royalty rate but

[267] *Larouche* (n 215) 3 and 32.
[268] *Geradin* (n 22) 18-19.

as a potentially wide range that accommodates approaches of both legal nature and economic function.[269] Secondly, the report recognizes that determining such FRAND range is challenging and prone to inaccuracies and, therefore, there are certain limits to what judicial authorities can do or should be expected do; "[a]gainst this background, policies that support market mechanisms and conditions conducive to bilateral negotiations and their proper conduct as early on as possible can enhance clarity around the definition of FRAND and restore legal certainty in the field of SEPs".[270] Furthermore, the report supports an incentive-based approach to FRAND that reflects the market diversity and dynamics, explaining that "innovators deserve market-based financial returns as much as implementers deserve market-based licensing terms" because economically consistent policymaking ultimately promotes healthy competition and has beneficial impacts to the industry.[271]

When it comes to the policy recommendations at the European level, the report encourages a policy action that provides a more clarified and flexible definition of FRAND: "Articulating a common set of criteria and guidelines for practice – anchored in a clear definition of FRAND – could facilitate private negotiations; enhance due diligence on behalf of the parties; limit the need to seek a third-party determination of a FRAND rate and, in the case of litigation, help courts set convergent standards while allowing flexibility on a case-by-case basis."[272] This is a position that I strongly agree with. The attention and efforts should be directed at the bilateral negotiations and how to prevent possible conflicts arising from such the negotiations. If both the patent holder and the implementer understand the meaning of fair, reasonable and non-discriminatory and what type of conduct, behavior and royalty rates are not in compliance with the SEP licensing practices, it would certainly ease the interaction between the parties to begin with. Another point in the report that I agree with is that the European approach should not attempt to determine or calculate a single royalty but tie FRAND compliance to the conduct of the patent holder and the implementer in the negotiations as it "is more likely to result in economically efficient royalty rates" and "encourages parties to do their due diligence, and to negotiate licenses as early as possible by avoiding delaying tactic and opportunism".[273] As already discussed in chapter 3, Geradin and Rato's arguments that the term "FRAND royalty" should be replaced with a more accurate description of "royalty rate established under an agreement negotiated in accordance with a FRAND commitment" applies here well.

Although the European Commission has already issued many studies related to SEPs and provided some guidance on SEP licensing, for example, by releasing a Communication setting

[269] *Pentheroudakis* (n 16) 159-160.
[270] *Ibid,* 160-161.
[271] *Ibid,* 164.
[272] *Ibid,* 165.
[273] *Ibid.*

out the EU approach to standard essential patents in 2017[274], I believe that there could still be a greater clarity on the FRAND terms at the European level. Therefore, in my opinion, a common framework or a policy recommendation that clarifies the meaning of FRAND, including its legal and economic nature, in a flexible manner supporting the proper behavior of both the patent holder and the implementer in the bilateral negotiations is needed to mitigate the current complexity and tension surrounding SEP licensing. I want to emphasize that the risk of anti-competitive behavior, such as opportunism and delaying tactics, is imminent by both parties' side and, therefore, the framework should not address only the conduct of the patent holder committed to FRAND but also the conduct of the implementer as a willing licensee. In addition, I could not highlight the importance of flexibility enough; the circumstances and facts of each licensing opportunity are always different and, hence, the meaning and interpretation of FRAND should not be too strict or absolute or otherwise it would purport itself as too stiff and rigid to actually work in practice. This resonates also with my other position that, although a well-thought-out common framework or policy recommendation would be very beneficial for the industry, at the same time, the European Commission and the public institutions in general should refrain from overly controlling or regulating the SEP licensing practices as they are ultimately for the SSOs to decide. Thus, such practices and particularly the commercial bilateral negotiations should be primarily left to the market actors to shape in the course of the changing and developing industry of standards.

[274] *European Commission* (n 188).

6 CONCLUSION

The importance of standardization cannot be emphasized enough when it comes to fostering development of technology as well as innovation and growth all over the world. Standards are present in our daily life – whether it is a smartphone, computer or any other smart device with wireless connectivity, such piece of modern technology implements multiple patents essential to a standard that guarantees the interconnected and interoperable world of networks and connective devices. Hence, the economic potential of standardization and digitalization is enormous. Particularly the deployment of 5G and the development of 6G, the next generations of mobile standards, will heighten the role of standard setting in future as companies operating in the telecommunications industry rush to invest vastly in research and development to invent new technological solutions that comply with the industry standards. Owning an SEP can be a valuable asset for the company when the industry locks in the standard, generating the patent owner potentially substantial licensing revenues. At the same time, the manufacturers of standard-compliant products are eager to implement such patents to their products to access such wireless technology, bringing new smart devices to the consumers and the market globally.

The practice of SEP licensing is, however, peculiar from the standpoint of law and economics. The placement and acceptance of a standard provides the SEP holder substantial market power since the market becomes tied on the standard and the patent declared as essential to such standard is fundamentally an exclusive right against others from exploitation. The intricacy of such exclusive right manifests as the SEP holder's possibility to behave in anti-competitive ways, which defeats the primary objective of standards to deploy technologies and innovations world-wide through open market access. For these reasons, standard setting organizations have adopted IPR policies that require SEP owners to commit to fair, reasonable and non-discriminatory licensing terms, ultimately for the purpose of limiting possible anti-competitive behavior, but without clearly expressing what such terms actually mean. In addition to such vague notion of FRAND, the licensing negotiations are considered as a commercial matter between the patent holder and the implementer outside the standard-setting environment. As the SEP owner and the implementer are left with the challenging task of interpreting what exactly is FRAND, the conflicting economic interests of both parties have resulted in a bundle of problems, sometimes leaving the parties unable to agree on a license agreement. In the end, such disagreements end up in court to be solved.

The meaning of FRAND commitment is not only unclear to the negotiating parties but has forced also scholars and judicial authorities to ponder what the policy behind such licensing terms should be, resulting in differing opinions and case law attempting to solve the

complexity surrounding FRAND terms. There is no consensus among academics on the meaning of FRAND but some prevailing economic and legal approaches exist to clarify the purpose of such limitation of licensing practices. Firstly, the main economic approach is that SEP licensing on FRAND terms should, on the one hand, reward the patent owner appropriately in order to incentivize contribution in research and development of technology and participation in standardization and, on the other hand, allow all potential implementers to access such standards and legally implement standardized technology without the fear of anti-competitive behavior by the patent owner. Secondly, from the legal viewpoint, FRAND terms are not a legal rule or law per se but have been considered rather as a legal principle that has multiple functions under contract law, competition and antitrust law, and patent law. Thirdly, FRAND commitment has been generally interpreted to create certain obligations for the SEP owner, such as the duty to offer FRAND license and negotiate in good faith as well as the limited right to seek an injunctive relief against an SEP infringement.

There has been a considerable growth in SEP litigation in recent decades resulting from disagreements between the patent holders and the implementers in the course of licensing negotiations, most cases concerning either patent infringement damages, royalty rates, injunctions or competition concerns. Thus, when it comes to the ambiguous nature of FRAND terms, case law has played an important role in contributing some clarity and guidance on how FRAND should be interpreted and applied in the practice of SEP licensing. Judicial authorities in the United States and Europe have not, however, provided a clear definition for FRAND itself but instead focused more on the economic and legal rationale behind such commitment to address possible anti-competitive risks. The notions of hypothetical negotiation and patent's *ex ante* incremental value have been especially popular approaches in the US courts to prevent improperly rewarding the SEP owner. Furthermore, the US and European policymakers have both recognized that the patent owner's right to injunction should be limited to some extent in the context of SEP licensing or otherwise there is an imbalance in bargaining power. Worth mentioning is the landmark decision *Huawei v. ZTE* by the CJEU that has greatly impacted the practice of SEP licensing negotiations in the EU, underlining the actual conduct of negotiating parties and clarifying the right to seek injunctive relief. Interestingly, the US judges have also had discretion to determine and calculate FRAND royalties but the case law has not established a single correct way to determine a royalty base or royalty rates but has rather introduced multiple approaches and calculation methods.

The growing litigation of SEP licensing has naturally attracted attention among academics and the judicial decisions interpreting FRAND commitment have not been spared from criticism. Many scholars have argued that the different methods applied in the landmark judgements are fundamentally problematic and therefore improper to solve disagreements between the

SEP holders and the implementers. For these reasons, some academics believe that FRAND terms represent a gap in the system and, as a result, proposals have been made to either attempt to fix the existing shortcomings of FRAND or to replace FRAND commitment with a new and allegedly better solution in order to solve many of the current issues surrounding SEP licensing. Six proposed alternative models were analyzed in depth: binding arbitration, alternative remedy for injunctions, royalty-free commitment, non-assertion commitment, *ex ante* licensing terms, and *ex ante* pseudo-pool approach. All options have their strengths and weaknesses but, in the end, turn out to be more or less unfit to actually repair the flawed nature of SEP licensing.

First, the alternative of binding arbitration – particularly the baseball-style binding arbitration proposal by Lemley and Shapiro – portrays itself as a rather reasonable remedy to fix the current FRAND licensing system, by supplementing the FRAND commitment with a binding arbitration commitment. However, the vulnerabilities of such proposal have not gone unnoticed by other scholars, claiming that binding arbitration commitment is in reality a solution in search of a problem. Thus, the alternative could actually result in negative effects, such as discouraging licensing negotiations and undercompensating the SEP owners.

Second, the alternative procedural remedy of interim payments suggested by Nikolic is another quite reasonable proposal attempting to fix one of the most argued issues of FRAND commitment, that is, injunctions. But in all honesty the proposal appears to be a bit unnecessary after the *Huawei v. ZTE* judgement that much clarified the use of injunctions in the context of SEP infringement and licensing negotiations. In addition, interim payments can make the licensing process highly costly for the implementer, which naturally is not a desired outcome.

Third, instead of using FRAND commitment to regulate licensing practices, the alternative of royalty-free commitment has been a successful licensing model in certain industries, such as Internet, where open and permission-free standards are a vital condition. However, when it comes to other standardized industries, for example, telecommunications standards, that are dependent on the industry participants' heavy investments in research and development in standards, it is clear that the royalty-free approach is not a satisfying solution. Hence, such alternative that does not properly compensate the inventor for its investments discourages and ultimately suffocates innovation and standardization.

Fourth, another licensing model used mainly with open standards, although still quite uncommon, is the non-assertion commitment, that is, a covenant not to sue. But surely the non-assertion commitment has similar weaknesses as the royalty-free commitment; it fits poorly such industries that rely on investments in research and development. Nevertheless,

Rysman and Simcoe's modified version of the non-assertion covenant, the NAAST policy, in which the patent owner's non-assertion commitment comes into effect after a period of temporary monopoly, is an interesting but not necessarily trouble-free idea to replace FRAND. In fact, the major weakness of the proposal is the challenging task of setting the assertion period – too long period hinders the implementer's chances to legally produce products complying with standards whereas too short period undercompensates the patent owner.

Fifth, the alternative of *ex ante* licensing terms has been advocated by many scholars since such open discussions on royalty terms and other licensing terms and conditions in the SSO level before a patent is declared to be essential to a standard have been perceived as a beneficial option that could overcome many of the risks and issues of the FRAND licensing model. However, there have been counterarguments against *ex ante* licensing discussions, describing the antirust risks of such discussions that restrict competition when the patent holder is put in a position where it has little or no market power. It has been also claimed that such *ex ante* discussions disclosing most restrictive licensing terms and royalty rates can be detrimental from an economic perspective as well, leaving the SEP holder undercompensated and sooner or later discouraging innovation and standardization.

Sixth, a pseudo-pool approach proposed by Contreras to supplement FRAND licensing with *ex ante* determination of aggregate royalty rates and pooling strategies adopted in SSOs is another interesting alternative attempting to fix the uncertainty surrounding standards. Although patent pools can be very useful and profitable structures when it comes to patent licensing, Contreras' proposal has certain potential disadvantages, such as the risk of antitrust liability of joint aggregate royalty negotiation and the risk of patent holders fleeing the system due to decreased royalties and undercompensation, that makes the alternative insufficient to actually fix SEP licensing on FRAND terms.

The theoretical analysis from a legal and economic perspective reveals that certainly none of the proposed alternatives appear to be significantly more attractive or workable solutions compared to the current licensing system tied to FRAND commitment. Another attestation of such finding is that there has not been a shift to these allegedly better options in the standardization industry. To conclude, the proposed alternative models do not provide a pivotal answer or solution to the complexities of SEP licensing and, in fact, despite of its drawbacks, the FRAND licensing model appears to be the best option available at the moment. The results and outcomes of the current system also support this claim; in the last decades, the industry of standardized technology has developed and grown rapidly due to successful and prospective collaborations between the industry actors. Thus, I argue that, although the practice of SEP licensing on FRAND terms can be very challenging for the negotiating parties,

it still allows certain flexibility in the standardization industry and has worked in most cases. In my opinion, FRAND commitment is not defective or broken in that sense that it would require significant repairing – however, that being said, a good system can always be better.

In order to ensure predictability and certainty of SEP licensing in future, the current system based on a commitment to FRAND terms could be improved if the notion of FRAND represented an actual meaning to both the patent owner and the implementer. Therefore, I support the proposition that the industry would benefit from a policy action – a common framework or a policy recommendation set by, for example, the European Commission – that provides a more clarified but very flexible meaning of FRAND commitment. The attention should be particularly directed at the legal and economic nature of FRAND and the bilateral commercial licensing negotiations, concentrating equally on the conduct of both negotiating parties since the risks of anti-competitive behavior are imminent by both sides. At the same time, flexibility should be strongly highlighted in the course of such policy-making; the European Commission or other public institutions should refrain from overly controlling or regulating the SEP licensing practices and leave the negotiations primarily to the industry and market to shape. In my opinion, although there is much more to FRAND than royalty rates, it is only consistent with this standpoint that such royalty determination should be primarily based on the most market-based method of comparable licenses.

To wrap up on a high note, it seems that this is more or less the direction where the European Commission is heading with SEPs. According to the Commission's 2020 Intellectual Property Action Plan, "the Commission will facilitate industry-led initiatives to reduce frictions and litigations among players in specific sectors" and "consider reforms to further clarify and improve the framework governing the declaration, licensing and enforcement of SEPs".[275] What concrete actions will the European Commission take, it remains to be seen.[276] [277]

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[275] European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Making the most of the EU's innovative potential, An intellectual property action plan to support the EU's recovery and resilience* (COM(2020) 760 final), section 4.

[276] The European Commission published recently an initiative – a proposal for a regulation – for feedback purposes, concerning a new framework for standard essential patents. The summary of the initiative states that "[t]his initiative will create a fair and balanced licensing framework and may combine legislative and non-legislative action". The Commission adoption is planned for the fourth quarter of 2022. See: 'Intellectual property – new framework for standard-essential patents' (European Commission Website) <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents_en> accessed 29 July 2021.

[277] Mueller speculates in his recent blog post that one possible direction of the new initiative by the European Commission may be an EU directive on SEP licensing and enforcement. See: Florian Mueller, 'BREAKING: European Commission preparing potential new regulation and/or directive on standard-essential patents' (*FOSS Patents*, 13 July 2021) <http://www.fosspatents.com/2021/07/breaking-european-commission-preparing.html> accessed 29 July 2021.

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