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Are Fair, Reasonable and Non-Discriminatory ("FRAND") Commitments Applicable Outside the Standard Essential Patents ("SEPs") Domain? – An Economic Perspective

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20 December 2019

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Contents

Abstract

To date, the Competition and Consumer Commission of Singapore ("**CCCS**") has dealt with two cases that involved Fair, Reasonable and Non-Discriminatory ("**FRAND**") commitments in order to resolve the competition concerns identified.

The idea of FRAND commitments is well established and commonly used by Standard Setting Organizations ("**SSOs**") to strike a balance between two objectives namely, to deter *ex-post* opportunistic behaviour by its members contributing Standard Essential Patents ("**SEPs**") in the standards setting process; and valuing technology contributions to standardisation efforts in a way that encourages further innovation. However, the application of FRAND commitments outside the standard setting process, i.e., in non-SEP cases, remains limited globally. This raises the question as to whether there is a unique set of circumstances specific to the standards setting process. Put differently, could FRAND be used as a behavioural remedy to address competition concerns in non-SEP cases with specific circumstances similar to those in SEP cases?

This research paper shows that the circumstances that give rise to the economic justification for the use of FRAND commitments in SEP cases are not unique, but instead are also present in some non-SEP cases such as those involving vertical effects in mergers and acquisitions, or abuse of dominance conduct such as refusal to supply. While FRAND commitments may be useful in non-SEP cases, there are challenges in their application, particularly the uncertain interpretation as to what constitutes "fair, reasonable and non-discriminatory". Nevertheless, there is still much room for competition authorities to explore using FRAND commitments as a behavioural remedy in addressing competition concerns.

Keywords: Intellectual property, Standard Setting Organisations, Fair, Reasonable, Non-Discriminatory, FRAND

JEL codes: L15, L24, 031, 034

1. Introduction

1.1. *Background*

1.1.1. To date, CCCS has had two cases that involved the use of FRAND commitments to address CCCS's competition concerns in the affected markets. The first case involved the merger of two book distributors, namely Times Publishing Limited and Penguin Group Companies.[1] The merger was cleared on the condition that the merged entity will undertake FRAND commitments, on both price and supply terms, to third-party book retailers. The second case involved voluntary commitments by several lift installers to sell lift spare parts to third-party contractors on a FRAND basis.[2] Such commitments were made in response to CCCS's investigations into alleged claims that certain lift installers had refused to supply essential lift spare parts, such as electronic boards, to third-party contractors for the maintenance of lifts.

1.1.2. The idea of FRAND commitments is well established and is commonly used by SSOs to deter *ex-post* opportunistic behaviour by its members contributing SEPs in the standards setting process. However, the application of FRAND commitments outside the standard setting process (i.e. in non-SEP cases) remains limited globally. This raises the question as to whether there is a unique set of circumstances that is specific to the standards setting process. Put differently, could FRAND be used as a behavioural remedy to address competition concerns in non-SEP cases with specific circumstances similar to those in SEP cases?

1.2. *Research objectives of this paper*

1.2.1. The objectives of this paper are two-fold. Firstly, the study aims to discuss the economic motivation underlining FRAND commitments as well as the flexibility with which FRAND commitments could be interpreted. Secondly, the study aims to show that the circumstances that give rise to the economic justification for the use of FRAND commitments in SEP cases are not unique, but rather, such circumstances are also present in some non-SEP cases. In this regard, this paper reviews recent cases that involve the implementation of FRAND commitments in the non-SEP context in the European Union ("**EU**") as well as in Singapore.

1.2.2. At the time of the writing of this paper, the authors are not aware of any other existing literature that discusses the applicability of FRAND commitments in non-SEP cases. This paper seeks to build on the existing literature on the economic frameworks of FRAND commitments in the SEP context and puts

[1] https://www.cccs.gov.sg/public-register-and-consultation/public-consultation-items/proposed-acquisition-by-times-publishing-of-penguin

[2] https://www.cccs.gov.sg/media-and-consultation/newsroom/media-releases/lift-suppliers-voluntary-commitments

forth the proposition that there is room for competition authorities to use FRAND commitments as a behavioural remedy in addressing competition concerns arising from some non-SEP cases which have circumstances similar to those present in SEP cases.

1.2.3. In accordance with the overall objectives articulated above, the paper is structured as follows: In Section 1, we will provide a primer on the economic benefits brought about by standards and SSOs as well as provide a brief overview on how standards are set at the SSO level. In Section 2, we will map out a trajectory of the key developments involving FRAND commitments and how the interpretation of FRAND commitments has evolved over the years. In Section 3, we will discuss the underlying economic motivation as to why SSOs seek to have their participating members commit to FRAND licensing terms. In particular, we will expound on how the use of FRAND commitments seek to curb *ex-post* opportunistic behaviours of both SEP holders and licensees after a standard has been established. In Section 4, we will embark on a discourse on the economic rationale for the flexibility with which the FRAND licensing terms could be interpreted. In Section 5, we will explore the idea of applying FRAND commitments in non-SEP cases. In particular, we put forth the proposition that the circumstances which give rise to the economic justification for the use of FRAND commitments in SEP cases are also present in some non-SEP cases, thereby warranting a wider application of FRAND commitments. In Section 6 and 7, we will explore past non-SEP cases that involved FRAND commitments in the EU as well as in Singapore. In Section 8, we will discuss the existing challenges of implementing FRAND commitments in the SEP and non-SEP domains. In Section 9, we will conclude on the key findings of this paper.

1.3. *The economic benefits of standards and SSOs*

1.3.1. Standards have always been important in our daily lives for instance, engineering measurements, telephones, electrical plugs, etc. However, in the hyper-connected era where interconnectivity becomes even more crucial, it is arguable that standards have become a pervasive facet of our daily lives in the 21st century. Take for instance, a laptop computer, which in itself, incorporates about 251 interoperability standards.[3]

1.3.2. At its core, a standard is essentially a framework that sets out the requirements for a specific item, material, component, system or service; or lays out the

[3] Biddle, B., White, A. and Woods, S. (2010). *How Many Standards in a Laptop? (And other empirical questions).* 2010 ITU-T Kaleidoscope: Beyond the Internet? – Innovations for Future Networks and Services, 1-7. Available at http://ssrn.com/abstract=1619440

details of a particular procedure or method. Standards are an essential feature in any modern-day economy and perform various functions, including[4]:

a) The assurance of a minimum level of quality;

b) The provision of information including standard service descriptions;

c) The reduction in variety, allowing for economies of scale in production; and

d) Interoperability or compatibility between different parts of a product, system or network.

1.3.3. Such functions bring about important economic benefits to both consumers and producers. On the consumer front, interoperability (through standardisation) increases the value of products to consumers. Such value to consumers is further bolstered in the context of network effects where the value of a product or service increases as the number of users increases. On the producer front, interoperability (through standardisation) lowers the costs of production by reducing the cost of acquiring technical information and simplifying product designs. Moreover, by ensuring interoperability between different manufacturers' products or components within a system, standards encourage the development of new and improved products.

1.3.4. Standard setting is often done through the auspices of independent SSOs which normally consist of active players in the market. SEPs, as its name suggests, are patents that are essential to the standard that has been chosen for a particular usage. By this virtue, it is not possible to manufacture products that comply with a certain standard without accessing these patents. This may, in turn, confer significant market power to the SEP holder(s).

1.3.5. While standards are commonly associated with SSOs, standards can also be established via competition in the open marketplace, known as "standards wars", where firms offering different technological solutions compete with one another until a tipping effect towards a particular technology solution occurs in the market.[5]

1.3.6. However, in the face of rapid technological advancement in recent years, companies have found it more profitable to collaborate on the development of standards through SSOs as compared to competing against one another to provide the *de facto* technological solution in the market place. In particular,

[4] Swann, P. (2000). *The Economics of Standardisation*. Final Report for Standards and technical regulations Directorate Department of Trade and Industry. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/461419/The_Economics_of_Standardization_-_an_update_.pdf

[5] An example of such a phenomenon is the competition between VHS and Beta or loosely known as the videotape format war. Eventually the market opted VHS as the standard for videotape format in the 1980s.

standards established through that of SSOs avoid "standards wars", which usually involve significant investment of resources in establishing one's user base. Furthermore, a "standards war" may lead to a delay in the adoption of technological solutions by consumers given their uncertainty in determining which technological solution offered by competing firms will be the *de facto* solution in the market. Ultimately, this might reduce the economic welfare that the new technological solution is supposed to bring to the market. In addition, there may be complex technical issues that cannot be easily resolved by a single firm. On the other hand, establishing standards through an SSO can be seen as more cost effective as industry players pool their resources together to address issues such as high transaction costs from the lack of standardized platforms for production.[6]

1.3.7. Over the years, there have been two noticeable trends in SEP activity across the world. Firstly, there has been a rapid growth in the number of SEPs. Such rapid growth could be attributed to the increasing technological complexity of Information and Communications Technologies ("**ICT**") standards; and also to attempts by companies to systematically file patents in order to license them or obtain freedom to operate through cross licensing agreements.[7]

1.3.8. Secondly, there has also been an increase in the diversity and specialisation of SEP holders. Case in point, in the 1990s, the standard setting process involved a handful of companies (mostly from industrialised countries), which were the SEP holders as well as the licensees at any one time. However, in recent decade, there has been a slew of entry by new players. In fact, the European Telecommunications Standards Institute ("**ETSI**") database recorded 104 patent holders who had declared their SEPs for the long-term evolution ("**LTE**") mobile standard alone in 2014 as compared to 36 in 2011.[8]

1.4. *The process of developing and setting standards through SSOs*

1.4.1. The process of developing and setting standards through SSOs is usually precipitated when industry participants perceive a technical issue or a new technical goal that requires the collective action of all participants in the industry. Once there is a consensus amongst industry players on establishing an industry-wide standard, technical experts are brought together to either contribute existing proprietary technologies; or develop new technical components under the wider umbrella of a SSO. Working groups within SSOs then review and evaluate the various contributed technologies and, through

[6] Wright, Joshua D. (2013). *SSOs, FRAND, and Antitrust: Lessons from the Economics of Incomplete Contracts*. 21 Geo. Mason L. Rev. 791.

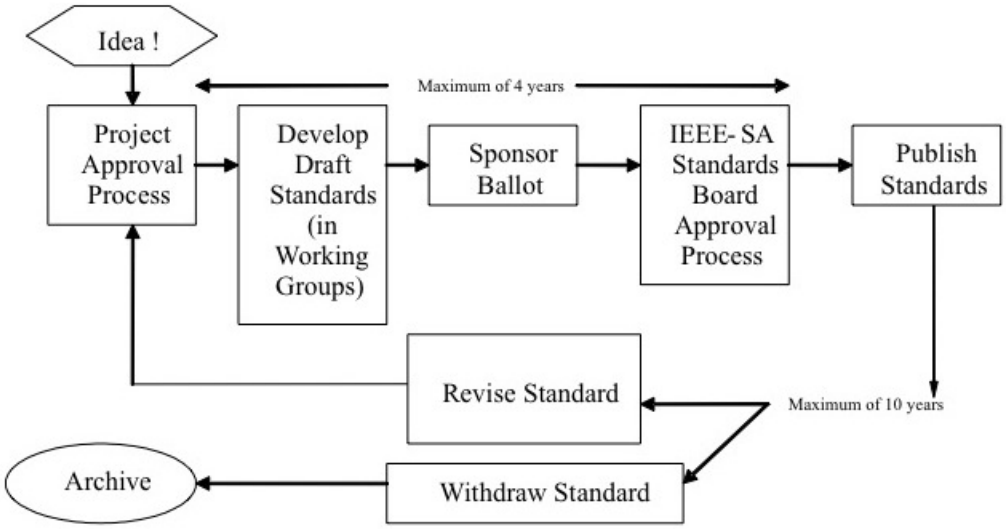
[7] Blind, K., Cremers, K. and E. Mueller. (2009). *The influence of strategic patenting on companies' patent portfolios.* Research Policy 38 (2), pp. 428-436.

[8] Pentherodakis, C., Baron, Justsus A. (2017). *Licensing terms of standard essential patents; a comprehensive analysis of cases.* JRC Science for Policy Report.

discussion with technical experts, determine the appropriate technology or sets of technology for the standards.

1.4.2. It is worth noting that the standard setting process takes a considerable amount of time from the initial conception of an idea to the adoption of a standard. Take for instance, the development of the Universal Mobile Telecommunications Service (UMTS) or third-generation (3G) mobile standard started in December 1998 when the working groups were formed within the ETSI. It was not till late 2001 when the first 3G products and services were commercially released to the public.[9] The significant amount of time devoted to the standard setting process is also illustrated in **Diagram 1** below, which summarises the Institute of Electrical and Electronics Engineers ("**IEEE**")'s recommended timeframe for the standard setting process:

Diagram 1: Timeframe of standard setting process as recommended by IEEE[10]



1.4.3. A common thread across most licensing policies of SSOs is that prior to the development of standards, members of SSOs who wish to have their Intellectual Property Rights ("**IPRs**") included in the standard, are often required to (i) disclose the IPRs that they own; and (ii) undertake a voluntary commitment to license their essential IPRs to all prospective licensees on FRAND terms.

1.4.4. At its crux, a typical FRAND commitment contains two key elements: (i) ready access to patented technology for licensees of the standard; and (ii) a reasonable price for that access. In the aftermath of the *Unwired Planet v. Huawei* case

[9] Layne-Farrar, Anne. (2011). *Innovative or Indefensible? An Empirical Assessment of Patenting within Standard Setting*. International Journal of IT Standards and Standardization Research 9:1-18.
[10] Brief of Amicus Curiae by the Institute of Electrical and Electronics Engineers, Incorporated in support of no party, 19 December 2012. Apple Inc. and NeXT Software, Inc. v. Motorola, Inc. and Motorola Mobility, Inc (2012).

(which is elaborated in Section 2 below), the application of FRAND has been clarified to encompass the process of negotiation between the SEP holders and licensees. In particular, in determining the FRAND terms for access, negotiating parties should adopt a FRAND approach to the negotiation. This is consistent with Justice Birss' ruling that "*both patent holders and licensees should take a FRAND approach to the negotiation of a license under a SEP or SEP portfolio governed by a FRAND undertaking*".[11]

1.4.5. While the application of FRAND has been clarified to include the negotiation process beyond the set of licensing terms, no SSO has provided a specific definition of what "fair" or "reasonable" means; or how to assess whether any particular terms and conditions are considered "discriminatory". Moreover, FRAND is sometimes referred to as RAND, especially in the United States. However, the authors note that there is no clear difference between both terms in the current literature. For simplicity, the authors shall use the former term, i.e., FRAND, throughout this paper.

1.4.6. Notwithstanding the ambiguity inherent in the interpretation of FRAND commitments, it is imperative to first understand the genesis of how the concept of FRAND commitments came into existence and how courts in different jurisdictions have interpreted such inherently vague commitments in reality.

2. FRAND commitments

2.1. *A brief timeline of FRAND commitments*

2.1.1. Before we embark on a discussion on the underlying economic motivation for FRAND commitments in the standard setting process, this section maps out a trajectory of key developments in relation to FRAND commitments over the years. The cases below discuss the use of FRAND commitments and how the interpretation of FRAND commitments have evolved. This provides context to what FRAND commitments entail in actual practice and informs our subsequent discussion on the underlying economic rationale for FRAND commitments.

2.1.2. As evident in the review below, court judgments have historically strived to develop FRAND commitments as a tool in balancing the various (sometimes, competing) economic interests of patent holders and licensees. For example, preserving the incentives to innovate for patent holders whilst maximising the economic welfare arising from the adoption of new technology/standard by licensees and consumers at large.

[11] Unwired Planet International Ltd v Huawei Technologies Co. Ltd. and Ors [2017] EWHC 711.

2.2. *Pseudo-FRAND order involving non-patents (1912)*

2.2.1. While there has been a recent renewal on the discourse in relation to FRAND commitments, its use can be traced to competition concerns as illustrated in the early case of *Terminal Railroad* in 1912 where 38 defendants colluded to restrict competition by preventing their competitors from gaining access to "every feasible means of railroad access to St. Louis".[12] In particular, this included access to the only two rail bridges and ferry service that were the only means to cross the Mississippi River from the Illinois side of the river to St. Louis.

2.2.2. The US Supreme Court found the arrangement to be an unlawful restraint of trade. To address the anti-competitive concerns arising from such an unlawful arrangement, the Supreme Court ordered the 38 defendants to grant membership in their association to "*any existing or future railroad*" on "*such **just** and **reasonable** terms as shall place such applying company upon a plane of **equality** in respect of benefits and burdens with the present proprietary companies."* [**Emphasis added**]

2.2.3. In addition, the Court ordered that non-members should be permitted to use the facilities *"upon such **just** and **reasonable** terms and regulations as well, in respect of use, character and cost of service, place every such company upon as nearly an **equal** plane as may be with respect to expenses and charges as that occupied by the proprietary companies."* [**Emphasis added**]

2.2.4. Notwithstanding that the focal product of contention in the *1912 Terminal Railroad* case did not actually involve patents, the order issued by the Supreme Court, which included requirements similar to FRAND terms, can be seen as a precursor to the FRAND licensing regime as enshrined by most SSOs of today.[13]

2.3. *Pseudo-FRAND commitments involving patents (1942)*

2.3.1. Another milestone in the development of FRAND commitments can be seen in the orders made by various U.S. courts in 1942 in the cases: *United States v. Standard Oil Co. (New Jersey)*; *United States v. Aluminium Co. of America*; and *United States v. American Bosch Corp.*.[14]

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[12] United States v. Terminal R.R. Ass'n of St. Louis, 224, U.S. 383, 391-97. (1912).

[13] Contreras, Jorge L. (2015). *A brief history of FRAND: Analysing current debates in standard setting and antitrust through a historical lens*. 80 Antitrust Law Journal 39. American University, WCL Research Paper No. 2014 – 18. Available at SSRN: https://ssrn.com/abstract=2374983 or http://dx.doi.org/10.2139/ssrn.2374983

[14] In the context of World War II, these orders were sometime loosely referred to as the "Wartime Consent Decrees" as they contained clauses which prohibited against trading activities with the enemy. For example, the order in *United States v. Aluminum Co. of America* have clauses which prohibited patent holders from "entering into or renewing any agreement" with IGF.

2.3.2. The first order was issued by the Federal District Court for the District of New Jersey in March 1942 in *United States v. Standard Oil Co. (New Jersey)*. The case involved a complex set of patent licensing, product distribution, and R&D agreements involving the Standard Oil Company (New Jersey) and its corporate affiliates; and the German industrial firm I.G. Farbenindustrie AG ("**IGF**") in the area of processing and refining hydrocarbons. In the very same year, the District Court for the Southern District of New York issued the two other orders, in *United States v. Aluminium Co. of America* and *United States v. American Bosch Corp*.

2.3.3. In general, the court orders in these cases required patent holders to grant licenses to third parties on "reasonable" terms. For instance, in the case of *United States v. Aluminium Co. of America*, the order required defendants to grant any applicant a non-exclusive licence to operate under its magnesium fabrication and production patents.[15]

2.3.4. As a result of the exceptional circumstances arising from World War II ("**WWII**"), both courts in the aforementioned cases also ordered some of these licences to be granted on a royalty-free, reciprocal basis, i.e., in exchange for the licence, the licensee has to grant the patent holder a royalty-free licence under its own patents. However, this reciprocal royalty-free condition was modified shortly after WWII to allow patent holders to charge the licensees "a reasonable and non-discriminatory royalty".[16]

2.3.5. Such a modification demonstrates the balance courts have sought to ensure between preserving the incentives for existing as well as future patent holders who take on the risks associated with innovation while ensuring reasonable access to licensees. Such considerations are seen in the modern FRAND commitments as we know them today.[17]

2.4. ***Contested pseudo-FRAND licensing order (1945)***

2.4.1. An important early contested pseudo-FRAND licensing order involved the case of *United States v. Hartford-Empire Co* in 1945. The case involved the dispute over a complex set of patent cross-licensing arrangements involving Hartford,

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[15] The orders issued for the two other cases (i.e. *United States v. Standard Oil (New Jersey)* and *United States v. American Bosch Corp*.) were largely similar in nature to the decree in *United States v. Aluminum Co. of America*.
[16] 1940–1943 Trade Cas. (CCH) Paragraph 56,200 §§ V, VI(a).
[17] Contreras, Jorge L. (2015). *A brief history of FRAND: Analysing current debates in standard setting and antitrust through a historical lens*. 80 Antitrust Law Journal 39. American University, WCL Research Paper No. 2014 – 18. Available at SSRN: https://ssrn.com/abstract=2374983 or http://dx.doi.org/10.2139/ssrn.2374983 The three orders revolved around RAND but as noted above, there is no clear difference between FRAND and RAND.

which was one of the two largest U.S. manufacturers of machinery for making glass containers and multiple manufacturers of glass containers.[1819]

2.4.2. In 1939, the DOJ alleged that Hartford and the other patent holders had illegally restrained competition violating sections 1 and 2 of the Sherman Act through their cross-licensing arrangement. In August 1942, the court held that the parties' cross licensing arrangement was anticompetitive. In particular, the arrangement (with its restrictive cross-licensing terms vis-à-vis third parties) stifled innovation, impeded competition and reduced the price competitiveness of manufactured glass containers.

2.4.3. In order to address the competition concerns arising from the aforementioned cross-licensing arrangement, the court ordered Hartford and the other patent holders to "*agree to license anyone, royalty free, on all present patents and pending applications for patents for the life of the patents…*".[20]

2.4.4. Subsequently, the decision was appealed to the US Supreme Court, which affirmed the District Court's findings but overturned the court's remedy order. In particular, Justice Roberts highlighted that by forcing Hartford and the other patent holders to license their technologies without the ability to collect royalties would have the same effect of confiscating their intellectual property rights.[21] Such a reasoning is also consistent with the earlier discussion on the lifting of the reciprocal royalty-free condition after WWII to allow patent holders to charge "a reasonable and non-discriminatory royalty", thereby safeguarding the incentives for innovation.

2.4.5. In the end, the Supreme Court ordered the district court to modify the initial order to allow the patent holders to charge a "*uniform* ***reasonable*** *royalties…****without discrimination*** *or restriction*" for the licences of the glassmaking machinery patents.[22]

2.4.6. The Hartford-Empire case is also significant as the principles set out in the Supreme Court's decision remain applicable in the discourse on FRAND commitments today.

2.4.7. In particular, to mitigate a situation where the potential licensee refuses to accept a licence under the uniform and reasonable terms offered by the patent

[18] Lynch, the second largest manufacturer of machinery for making glass containers at that time was also involved. The other parties involved included Owens-Illinois and Hazel-Atlas, which were the two largest producers of glass containers; as well as Corning, which was the principal manufacturer of pressed and blown glass containers.
[19] Taken altogether, the parties to the cross-licensing pool held more than 800 patents covering container machinery, out of which Hartford owned 600. To put things into perspective, by 1938, the machinery that were licensed under this cross-licensing pool accounted for 94% of the supply of glass containers made in the U.S.
[20] United States v. Hartford-Empire Co., 46 F. Supp. 541 (N.D. Ohio 1942).
[21] United States v. Hartford-Empire Co., 46 F. Supp. 541 (N.D. Ohio 1942).
[22] Richard J. Gilbert, Antitrust for Patent Pools: A Century of Policy Evolution, 2004 STAN. TECH. L. REV. 3, Paragraph 43

holder (akin to the case of hold-out, which will be discussed in further detail below). Justice Roberts explained that the patent holder should still reserve its right to bring legal actions against the refusing party for potential infringement of its patents.[23] This is important as the ability of patent holders to bring legal actions (e.g. injunctions) against alleged infringers affects the inherent value of the technology in question and ultimately, future incentives to innovate.

2.4.8. Furthermore, the order also contemplated the situation where parties were not able to come to a consensus on a "reasonable" royalty rate. In this regard, the order provided the following provision "*either party may apply to the Court for determination of such reasonable royalty*".[24]

2.5. *Early court decision on which party had the burden of proof to establish "reasonableness" of proposed royalty rate (1950)*

2.5.1. An important early court decision determining which party had the burden of proof to establish the reasonableness of the proposed royalty rates was the case of *United States v. Textile Machine Works* in 1950. The case was concerned with alleged collusion involving patents in the market for hosiery manufacturing machinery. The case was eventually settled in 1950 with the defendants agreeing to license their patents to all applicants.

2.5.2. This case is significant as the court's order provided that in a proceeding brought to determine a reasonable royalty, *"the burden of proof shall be upon the defendant* [patent holder] *to whom application is made to establish, by a fair preponderance of evidence, a reasonable royalty, and the Attorney General shall have the right to be heard thereon*".[25] In *Huawei v ZTE* (see below for a detailed discussion), the Court of Justice of the European Union ("**CJEU**") seems to have adopted a similar approach in that the patent/SEP holders have the responsibility to discharge this burden of proof given that they are in a better position to determine whether their offers are on FRAND terms to begin with.

2.6. *First SSO's FRAND licensing policy (1956)*

2.6.1. The development of standards through standard setting bodies in the U.S. can be traced back to the formation of the American Engineering Standards Committee ("**AESC**") in 1916.[26] This committee was formed with representatives from key engineering sectors such as electrical, mechanical, civil, materials and mining; as well as with representatives from three government agencies, the Bureau of Standards, Departments of War and the

[23] Hartford-Empire Co., 323 U.S.
[24] YALE L.J., supra note 50, at 123 (Final Judgment Paragraph 13(C)(3) (added by order dated May 17, 1946)).
[25] 1950 U.S. Dist. LEXIS 1909 (S.D.N.Y. Oct. 9, 1950).
[26] Andrew L. Russell. (2014). *Open standards and the digital age: history, ideology, and networks.* Cambridge University Press New York, NY, USA © 2014.

Navy. In 1928, the American Standards Association ("**ASA**") succeeded AESC as the new standards committee that oversaw key standardisation activities of major industries throughout the 20th century.

2.6.2. In 1956, ASA introduced the very first formal policy to govern the licensing of patented technologies which were codified into standards.[27] In 1959, the ASA policy permitted the approval of American National Standards covered by patents conditional on the patent holder offering to license the relevant patents to others on "reasonable terms". In particular, ASA issued the following guidelines for patents: "*Standards should not include terms whose production is covered by patents unless the patent holder agrees to and does make available to any interested and qualified party a license on* ***reasonable*** *terms or unless other unpatented competing items are included within the standards and the patented item would suffer were it left out.*"[28][**Emphasis added**]

2.7. *Patent ambush case: FTC v Rambus, Inc. (2002)*

2.7.1. In the period from 1970s to 1990s, there were fewer reported antitrust cases that involved licensing orders (and antitrust enforcement in general).[29]

2.7.2. However, the discourse on the nexus between antitrust and standards setting was revived by the case *Rambus, Inc. v. FTC* in 2002. In particular, FTC brought charges against Rambus, Inc. alleging that it had violated federal antitrust laws by deliberately engaging in conduct that served to deceive an industry-wide SSO (in this case, the Joint Electron Device Engineering Council[30] ("**JEDEC**") Solid State Technology Association), resulting in adverse effects on competition.[31]

2.7.3. The crux of the issue was that Rambus failed to disclose to JEDEC or its members that it was actively working to develop, and did in fact possess, a patent and several pending patent applications that involved specific technologies proposed for, and which were ultimately included, in the relevant

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[27] Literature review shows that ASA actually acknowledged the possibility of obtaining patents by potential licensees from patent holders of standardized technology and allowing SSOs to codify patented technologies into standards (so long as measures were taken to ensure that "monopolistic tendencies" were mitigated) as early as 1932.

[28] AM. STANDARDS INST., Procedures of American Standards Association (1959).

[29] Contreras, Jorge L. (2015). *A brief history of FRAND: Analysing current debates in standard setting and antitrust through a historical lens*. 80 Antitrust Law Journal 39. American University, WCL Research Paper No. 2014 – 18. Available at SSRN: https://ssrn.com/abstract=2374983 or http://dx.doi.org/10.2139/ssrn.2374983

[30] JEDEC is the SSO in the semiconductor industry, which aims to develop and issue widely adopted technical standards for a common form of computer memory known as synchronous dynamic random access memory, or "SDRAM" for short. Such memory chips which incorporated JEDEC's SDRAM standards are used in a wide variety of products downstream for e.g. personal computers, fax machines, printers, video game equipment, etc.

[31] FTC issues complaint against Rambus, Inc., 19 June 2002. https://www.ftc.gov/news-events/press-releases/2002/06/ftc-issues-complaint-against-rambus-inc

standards of Synchronous Dynamic Random-Access Memory ("**SDRAM**").[32] The failure to disclose this information, i.e., to engage in alleged "patent ambush", on the part of Rambus was considered to be particularly egregious given that Rambus had participated in JEDEC's SDRAM-related work for more than four years prior to Rambus' anti-competitive conduct. To this end, the FTC investigation revealed that Rambus "*gained information about the pending standard, and then amended its patent applications to ensure that subsequently issued patents would cover the ultimate standard.*"[33]

2.7.4. Subsequently when the SDRAM standard was established, Rambus notified DRAM manufacturers that it held patent rights to the technologies adopted within the industry standard and that the continued manufacture, sale, or use of products that met the standard infringed its rights. Several notable large memory companies such as Samsung, Hitachi, and Toshiba acceded to Rambus' royalty demands, which were in the range of US$50 to US$100 million per year.[34] However, the rest of the large memory companies did not and several patent infringement cases resulted.

2.7.5. In this regard, FTC alleged that the conduct had allowed to Rambus to gain a superior bargaining position in asserting its patent rights over the relevant JEDEC standards vis-a-via downstream memory manufacturers producing products that adopt the relevant standards. Ultimately, FTC asserted that Rambus' conduct has caused or threatened to cause substantial harm to competition and consumers.[35]

2.7.6. Subsequently, Rambus appealed the FTC's order to the U.S. Court of Appeals for the District of Columbia Circuit. In April 2008, the Court found that the FTC had insufficient evidence in establishing the counterfactual, which was that JEDEC would have selected an alternative technology as the standard had Rambus made the required disclosures of its patented technologies. In other words, the Court ruled that if JEDEC would have standardised the same technology (notwithstanding Rambus' deception), then the deception could not be found to have restricted competition in the market.[36]

2.7.7. In the aftermath of the Court's rulings, the FTC filed for an appeal to the Supreme Court. However, the Supreme Court declined to take up the appeal.

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[32] Similar to other SSOs, JEDEC also required its members to voluntarily commit to license their technologies on a RAND basis as well as to disclose any patents, or pending patent applications, involving the standard-setting work being undertaken by the organization prior to any standard-setting process.

[33] Opinion of the Commission, by Commissioner Pamela Jones Harbour for a unanimous commission, 2 August 2006.

[34] FTC issues complaint against Rambus, Inc., 19 June 2002. https://www.ftc.gov/news-events/press-releases/2002/06/ftc-issues-complaint-against-rambus-inc

[35] FTC issues complaint against Rambus, Inc., 19 June 2002. https://www.ftc.gov/news-events/press-releases/2002/06/ftc-issues-complaint-against-rambus-inc

[36] Layne-Farrar, Anne. (2016). *The Economics of FRAND*. Antitrust Intellectual Property and High Tech Handbook, Cambridge University Press, Daniel Sokol ed., Forthcoming.

Eventually, the FTC formally dismissed the complaint in 2009. While the case was not taken up on appeal, the case is significant in the history of FRAND developments as it garnered a lot of publicity and drew the attention of a number of antitrust regulators on the issue of patent disclosure and deceptive practices in SSOs. As a result, a number of SSOs introduced amendments to their IPR policies to clarify their patent disclosure rules so as to mitigate against a similar situation from arising.[37]

2.8. *European Commission ("EC") decision that a patent holder seeking to enforce SEPs through injunctive relief can be guilty of an abuse of a dominant position (2014)*

2.8.1. On 29 April 2014, the EC issued two landmark competition decisions in relation to a series of disputes amongst Motorola Mobility ("**Motorola**"), Samsung Electronics Co., Ltd. ("**Samsung**") and Apple Inc. ("**Apple**"). This series of patent disputes, which erupted recently in the smartphone industry, is also commonly known as the "smartphone patent wars[38]". In the trajectory of the key developments of FRAND commitments, these two decisions are significant as they clarified whether, and in what circumstances, a patent holder seeking to enforce SEPs through injunctive relief can be guilty of an abuse of a dominant position under EU competition rules.

2.8.2. As a primer, both Motorola and Samsung owned SEPs[39] related to various telecommunications standards and had committed to license such SEPs on a FRAND basis. While both cases differ on their facts and circumstances, it is important to note that both cases involved similar conduct by the SEP holders. In particular, both Motorola and Samsung sought injunctions against Apple, which was, and is currently a competing manufacturer of smartphone and tablets, to restrain its use of certain of their patents.

2.8.3. While the EC recognised that seeking injunctions before courts is generally a legitimate remedy for patent holders in case of patent infringements, the EC also emphasized that the seeking of an injunction based on SEPs may constitute an abuse of a dominant position (under Article 102 of the Treaty on the Functioning of the EU ("**TFEU**")) if the SEP holder has given a voluntary commitment to license its SEPs on FRAND terms; and where the company against which an injunction is sought is willing to enter into a licence agreement on such FRAND basis. In particular, seeking SEP-based injunctions against a willing licensee could risk excluding products from the market, thereby

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[37] Layne-Farrar, Anne. (2014). *Moving Past the SEP RAND Obsession: Some Thoughts on the Economic Implications of Unilateral Commitments and the Complexities of Patent Licensing*. George Mason Law Review 21.

[38] Carrier, Michael A. (2012). *A roadmap to the smartphone patent wars and FRAND licensing*. CPI Antitrust Chronicle, Vol. 2.

[39] The SEPs owned by Motorola relate to the ETSI's GPRS standard, part of the GSM standard, which is a key industry standard for mobile and wireless communications. The SEPs owned by Samsung relate to the ETSI's 3G UMTS standard, which is a key standard for mobile and wireless communications.

distorting licensing negotiations and leading to anticompetitive licensing terms as compared to the situation absent the seeking of the injunction.

2.8.4. In accordance with the principle set out above, the EC found that it was abusive for Motorola, to both seek and enforce an injunction against Apple in Germany on the basis of an SEP which it had committed to license on FRAND terms; and where Apple had agreed to take a licence and be bound by a determination of the FRAND royalties by the relevant German court.[40] In addition, the EC also found it anticompetitive that Motorola insisted, under the threat of the enforcement of an injunction, that Apple give up its rights to challenge the validity or infringement by Apple's mobile devices of Motorola SEPs.[41]

2.8.5. However, given the novelty of this case, the EC decided not to impose a fine on Motorola. Instead, the EC ordered Motorola to eliminate the negative effects resulting from its conduct.[42]

2.8.6. In the case of *Samsung*, the EC reached a similar conclusion. In particular, based on the facts and circumstances, the EC considered Apple a willing licensee on FRAND terms for Samsung's SEPs, and that against this background, the seeking of injunctions against Apple based on Samsung's SEPs in several EU Member States may constitute an abuse of a dominant position in breach of Article 102 of the TFEU.[43]

2.8.7. To address the EC's competition concerns, Samsung committed for a period of five years not to seek any injunctions in the European Economic Area against any company that agreed to a particular framework for licensing any of Samsung's SEPs, present and future, that relate to technologies implemented in smartphones and tablets. In particular the framework provided for a negotiation period of up to 12 months; and if no agreement was reached, a third-party determination of FRAND terms by a court if either party chooses, or by an arbitrator if both parties agree as such.[44]

2.8.8. Apart from being the first time where the EC ruled that seeking injunctions by SEP holders against willing licensees could constitute that of an abuse of a dominant position, the twin decisions above are also significant as they provided a "safe harbour" for potential licensees who are willing to take a licence on FRAND basis so long as they are able to demonstrate that they are a willing licensee by agreeing that a court or mutually agreed arbitrator adjudicates the FRAND terms.[45]

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[40] Case AT.39985 – Motorola – Enforcement of GPRS Standard Essential Patents.
[41] Case AT.39985 – Motorola – Enforcement of GPRS Standard Essential Patents.
[42] Case AT.39985 – Motorola – Enforcement of GPRS Standard Essential Patents.
[43] Case AT.39939 – Samsung – Enforcement of UMTS standard essential patents.
[44] Case AT.39939 – Samsung – Enforcement of UMTS standard essential patents.
[45] EC Memo in relation to Case AT.39985 – Motorola – Enforcement of GPRS Standard Essential Patents dated 29 April 2014.

2.9. *Defined procedural framework for actions against SEP infringement: Huawei v ZTE case (2015)*

2.9.1. Following closely on the heels of the EC's decisions in relation to *Motorola* and *Samsung* was the *Huawei v ZTE* case, which sets out a defined procedural framework for actions against SEP infringement. The *Huawei v ZTE* case involved two Chinese companies, namely Huawei Technologies Co. Ltd ("**Huawei**") and Zhongxing Telecommunication Equipment Corporation ("**ZTE**"). Huawei was, and is a major global provider of information and communications technology infrastructure and smart devices,[46] and is the owner of a European patent (EP 2 090 050 B1) in the telecommunications sector in Germany. In accordance with patent disclosure policies, Huawei notified ETSI in 2009 that its patent was essential to the LTE or 4G standard and undertook to license its patented technology on FRAND terms.[47]

2.9.2. In 2011, Huawei brought a case before the Dusseldorf Regional Court and alleged that ZTE, which marketed telecommunication products in Germany, had incorporated Huawei's patented technology to produce telecommunication products in Germany without paying any royalties. For the alleged infringement, Huawei sought an injunction against ZTE amongst other requests.[48]

2.9.3. An interesting point to note is that before Huawei acted against ZTE, both parties had engaged in discussions concerning the infringement and the possibility of concluding a license on FRAND basis. However, it was noted that no consensus was reached between both parties.[49] The Dusseldorf Regional Court in turn, referred several questions to the CJEU to clarify the circumstances under which a dominant SEP-holder that had given a FRAND commitment would breach competition law by seeking an injunction against a potential licensee.

2.9.4. In November 2014, CJEU issued its judgment which outlined the first ever procedural framework for actions against SEP infringements. The framework is also loosely known as the "ping-pong framework" and is detailed as follows:

a) An SEP holder must first alert the alleged infringer of the infringement by specifying the SEP and the way in which it has been infringed;

b) Secondly, after the alleged infringer has expressed its willingness to conclude a licensing agreement on FRAND terms, the SEP holder is obligated to make a written licence offer on FRAND basis to the alleged

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[46] https://www.huawei.com/en/
[47] Case C-170/13 *Huawei Technologies Co. Ltd. v. ZTE Corp*, judgment dated 16 July 2015.
[48] Huawei also sought for a recall of products, rendering of accounts; and an award of damages. Case C-170/13 *Huawei Technologies Co. Ltd. v. ZTE Corp*, judgment dated 16 July 2015.
[49] Case C-170/13 *Huawei Technologies Co. Ltd. v. ZTE Corp*, judgment dated 16 July 2015.

infringer before seeking injunctive relief or making a request for corrective measures. Such an offer should include all the terms normally included in a licence in the sector in question, in particular the royalty amount and the methodology in which the royalty is derived.

c) Thirdly, the alleged infringer must respond to that offer in a diligent and serious manner. If the alleged infringer does not agree with the SEP holder's initial offer, it must promptly counter-propose in writing a reasonable offer relating to the clauses with which it disagrees.

d) Furthermore, it is noted that where the alleged infringer is using the patented technology of the SEP holder before a licensing agreement has been concluded, it is for the alleged infringer to provide appropriate security, for example, by providing a bank guarantee. The amount of the security must include, *inter alia*, the number of the past acts of use of the SEP, and the alleged infringer must be able to render an account in respect of those acts of use.

e) In the event no agreement is reached on the details of the FRAND terms following the counter-offer by the alleged infringer, the parties may request that the amount of the royalty be determined by an independent third-party.

f) Finally, it is provided that if the alleged infringer does not respond to the offer in good faith or if the conduct of the alleged infringer is purely tactical, it shall not constitute an abuse of a dominant position on the part of the SEP holder if it so chooses to make a request for corrective measure or seeking an injunction.[50]

2.9.5. The judgment is significant on several fronts. As mentioned earlier, it is the very first procedural framework for actions against SEP infringements that attempts to strike a balance between maintaining competition and safeguarding the intellectual property rights of SEP holders. Moreover, it is significant as the burden of initiating the FRAND license negotiations is shifted to the SEP holders given that they are better placed to check whether their offer are consistent with the FRAND requirements as compared to the alleged infringer.[51]

[50] Case C-170/13 *Huawei Technologies Co. Ltd. v. ZTE Corp*, judgment dated 16 July 2015.
[51] Dr. Markus Gampp LL.M. (2015). "'Huawei v ZTE' – CJEU landmark decision provides new ground rules for asserting standard-essential patents in Europe." The article can be accessed here: https://www.dlapiper.com/en/uk/insights/publications/2015/07/huawei-v-zte/

2.10. ***Determination by a UK court of the FRAND royalty rate for a worldwide licence: Unwired Planet v Huawei case (2017)***

2.10.1. This case involved two companies namely, Unwired Planet International Ltd. ("**Unwired Planet**") and Huawei. Unwired Planet is a US telecom patents portfolio owner whose business is licensing its patents to companies who make and sell telecommunication equipment such as mobile phones and infrastructure.[52]

2.10.2. On March 2014, Unwired Planet sued Huawei, Samsung and Google for infringing six (6) UK patents from their portfolio, out of which five (5) were claimed to be SEPs.

2.10.3. A month into the proceeding, on April 2014, Unwired Planet made an open offer to Huawei, Samsung and Google to license its entire global portfolio (which include both SEPs and non-SEPs). The defendants denied infringement/essentiality and contended that the patents were invalid, counterclaiming for revocation. Moreover, the defendants argued that the offer was not on a FRAND basis.[53]

2.10.4. Huawei further raised defences and counterclaims based on breaches of competition law. In particular, Huawei argued that Unwired Planet abused its dominant position by firstly, seeking an injunction as the SEP holder's offer was not on FRAND basis to begin with. Secondly, Huawei argued that Unwired Planet's insistence on a worldwide licence constituted an abuse, that it had attempted to impose unfair prices; and that the patent holder abused its dominance by bundling SEPs and non-SEPs.

2.10.5. The English High Court ruled that, while Unwired Planet (as the owner of SEPs) did hold a dominant position in the market for licences under those SEPs, Unwired Planet did not abuse its dominant position despite Unwired Planet:

a) issuing proceedings for an injunction prematurely or maintaining a claim for injunction;

b) seeking a worldwide licence; or

c) bundling SEP and non-SEPs in its licensing offers.[54]

2.10.6. On April 2017, in an unprecedented decision, the English High Court determined the FRAND royalty rates for a worldwide licence to Unwired Planet's portfolio of SEPs, which were essential to the LTE (4G), UMTS (3G)

[52] Unwired Planet International Ltd v Huawei Technologies Co. Ltd and ors [2017] EWHC 711.
[53] Unwired Planet International Ltd v Huawei Technologies Co. Ltd and ors [2017] EWHC 711.
[54] Unwired Planet International Ltd v Huawei Technologies Co. Ltd and ors [2017] EWHC 711.

and GSM (2G) standards. Justice Birss held that the English Court had jurisdiction to set a FRAND royalty rate after concluding that none of the offers made by either of the parties (i.e. Unwired Planet and Huawei) had been on a FRAND basis. In addition, since Huawei was not prepared to take a licence on the FRAND terms set by the Court, an injunction was granted against Huawei to prevent its infringement of two of Unwired Planet's SEPs (which had been previously found to be valid and infringed).

2.10.7. This case is significant on several fronts as it pushes the boundaries for the interpretation of FRAND commitments[55]:

a) Firstly, the English High Court can set the terms of a worldwide FRAND licence and is not restricted to determining whether a given set of terms is FRAND.

b) There is only one set of licence terms which are FRAND in a given set of circumstances.[56] In that way the FRAND undertaking can be enforced. This is to mitigate a situation where there are two sets of terms which are both FRAND in a given set of circumstances.[57]

c) FRAND characterises the terms of a licence but also refers to the process by which a licence is negotiated. Building on the "ping-pong framework" as established by CJEU in the *Huawei v ZTE* case, Justice Birss further explained that the SEP holder is obliged by contract to take a FRAND approach to the negotiation and to grant a licence on FRAND terms. In turn, the licensee must also take a FRAND approach to the negotiation and accept a licence on FRAND terms if it wishes to take advantage of the constraint on the SEP holder's rights imposed by the FRAND undertaking.

d) An appropriate way to determine a FRAND royalty rate is to determine a benchmark rate which is governed by the value of the patentee's portfolio. That will be fair, reasonable and generally non-discriminatory. In particular, it is noted that the rate does not vary depending on the size of the licensee. Small new entrants are entitled to pay a royalty based on the same benchmark as established large entities.[58]

e) A FRAND rate can be determined by using comparable licences if they are available. Freely negotiated licences are relevant evidence of what may constitute FRAND. Alternatively, a top down approach can be used in

[55] Unwired Planet International Ltd v Huawei Technologies Co. Ltd and ors [2017] EWHC 711.
[56] Justice Birss noted that the circumstances are idealized in various ways – for example there is no hold up and no hold out. For further details, to refer to Unwired Planet International Ltd v Huawei Technologies Co. Ltd and ors [2017] EWHC 711.
[57] However, the England and Wales Court of Appeal subsequently rejected that there can only one true FRAND rate. See paragraph 2.10.8.
[58] Unwired Planet International Ltd v Huawei Technologies Co. Ltd and ors [2017] EWHC 711.

which the rate is set by determining the SEP holder's share of relevant SEPs and applying that share to the total aggregate royalty for a standard.

2.10.8. In October 2018, the England and Wales Court of Appeal rejected all grounds of Huawei's appeal against the foregoing judgment by the English High Court. However, the Court of Appeal overruled Justice Birss' ruling that there is only one true FRAND rate as such a rigid approach will go against the fundamental concepts of fair and reasonable. In particular, the Court of Appeal concluded that there may be a number of sets of terms that are fair and reasonable in a given set of circumstances for the following reason:

"*Patent licenses are complex and, having regard to the commercial priorities of the participating undertakings and the experience and preferences of the individuals involved, may be* ***structured in different ways*** *in terms of, for example, the particular contracting parties, the rights to be included in the license, the geographical scope of the licences…*"[59][**Emphasis added**]

3. The motivation for FRAND – A balanced approach

3.1. *Twin objectives of the standard setting process*

3.1.1. We will now turn to the underlying economic motivation in using FRAND commitments to strike a balance between the interests of SEP holders and licensees in the standard-setting process. Section 4 will further explore the economic motivation for ensuring flexibility in the interpretation of FRAND commitments.

3.1.2. As evident in the history of developments from 1912 till present-time in the preceding section, FRAND commitments are not a one-way street. They are not to impose obligations on SEP holders only but rather, serve to provide balance and flexibility in managing the interests (often conflicting in nature) of SEP holders and licensees.

3.1.3. To put the discussion on the economic motivation for FRAND commitments in context, we start with a brief discussion on the key objectives of SSOs. SSOs around the world often have to strike a balance between two objectives which are in conflict with one another: to promote the dissemination of knowledge while ensuring that the intellectual property rights of innovators are protected. For example, excerpts of the objectives of ETSI are reproduced below to highlight such a tension:

"…ETSI IPR Policy seeks to reduce the risk to ETSI, Members, and others applying ETSI Standards and Technical Specifications, that ***investment in the***

[59] Paragraph 121 of [2018] EWCA Civ 2344 In the Court of Appeal (Civil Division) on Appeal from Chancery Division, Patents Court, Mr. Justice Birss [2017] EWHC 711 (PAT).

preparation, adoption and application of Standards could be wasted as a result of an Essential IPR for a Standard or Technical Specification being unavailable." [**Emphasis added**]

"IPR holders whether members of ETSI and their affiliates or third parties, should be ***adequately and fairly rewarded for the use of their IPRs in the implementation of Standards and Technical Specifications.*** [**Emphasis added**]

3.1.4. The twin objectives enshrined in most SSOs emphasize the two-sided nature of the standard setting process through the SSOs. In other words, both objectives have to be satisfied to ensure a commercially successful standard.[60] Without one or the other, the standard development process will come to a halt.

3.1.5. The importance of the two-sided nature in the standard setting process cannot be overemphasized. Consider the following hypothetical scenario where an SSO pursues the sole objective of ensuring the protection of intellectual property rights of the SEP holders with no regard as to whether licensees are able to gain access to essential technologies for compliance with the standard and at reasonable rates. The eventual outcome is that any standard developed will not be readily and widely adopted as potential licensees might not be willing and able to pay at the rates demanded by the SEP holders.[61]

3.1.6. Alternatively, consider another hypothetical scenario where an SSO pursues the sole objective of ensuring the wide spread adoption of the new technology with no regard as to whether the SEP holders receive adequate compensation for their risky investments in inventions that move the evolution of standards forward. The outcome of such a situation is that there would be little incentive for any firm to make such investments or to participate in future cooperative standard setting efforts.[62]

3.1.7. However, SSOs are cognisant that certain features of the standard setting process might give rise to *ex-post* opportunistic behaviours of both SEP holders and licensees, which in turn might threaten the delicate balance between the two aforementioned objectives. The features are as follows:

a) the very definition of a standard setting process implies a single technological solution. In other words, the standard setting process will eliminate all other alternative technologies and confer significant market power to the SEP holder whose technology is included in the standard; and

[60] Layne-Farrar, Anne. (2016). *The Economics of FRAND*. Antitrust Intellectual Property and High Tech Handbook, Cambridge University Press, Daniel Sokol ed., Forthcoming.
[61] Lemley, Marc and Carl Shapiro. (2007). *Patent Holdup and Royalty Stacking*. Texas Law Review 85:1989.
[62] Layne-Farrar, Anne, Gerard Llobet, and Jorge Padilla. (2014). *Payments and Participation: The Incentives to Join Cooperative Standard Setting Efforts*. Journal of Economics & Management Strategy 23:24–49.

b) the standard setting process at its core involves bringing industry players, sometimes competitors, together and providing a conduit where such industry players coordinate their actions.

3.1.8. The aforementioned features, which are common in the standard setting process, provide the very conditions with which competition law is concerned. The following section shall elaborate on the *ex-post* opportunistic behaviours of both SEP holders and licensees in greater details.

3.2. *FRAND commitments to curb ex-post opportunistic behaviour by SEP holder: Hold-up*

3.2.1. While the economic issue of potential hold-up is prevalent in FRAND-related literature, hold-up is not an economic issue that is unique to the standards setting process. In this regard, there is extensive economic literature studying the phenomenon of hold-up in other circumstances.[63]

3.2.2. In the context of patents, a hold-up occurs when an SEP holder exploits asset-specific investments to demand a higher royalty rate than what would have prevailed in a competitive process.[64] Hold-ups (as well as the perceived threats of hold-ups) are problematic as they can "*deter innovation by increasing costs and uncertainty for other industry participants, including other patent holders*"[65]; "*induce users to postpone or avoid incorporating standardised technology into their products*"[66]; and ultimately increase the prices of end products that incorporate such patented technology.

3.2.3. For potential hold-up risk to materialise, two conditions must be present: (i) asset specificity and (ii) self-interest seeking with guile or deception.[67] In the context of the standards setting process, both conditions are satisfied and elaborated on below.

3.2.4. Prior to the adoption of a standard, a participating patent holder faces intense competition from alternative technologies available in the marketplace. As such, the amount of royalty that the patent holder can charge is determined by

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[63] Williamson, Oliver E. (1985). *The Economic Institutions of Capitalism*. Simon and Schuster.

[64] Comment of U.S. Federal Trade Commissioner Joshua D. Wright and Judget Douglas H. Ginshurg on the Canadian Competition Bureau's draft updated Intellectual Property Enforcement Guidelines. (2010). Available at https://www.ftc.gov/system/files/documents/public_statements/734661/150810canadacomment.pdf

[65] FTC Statement at 5. (2013). (citing FTC, The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition at 234, available at http://www.ftc.gov/os/2011/03/110307patentreport.pdf; FTC-DOJ, Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition at 36 (2007), available at http://www.ftc.gov/reports/innovation/P040101PromotingInnovationandComp etitionrpt0704.pdf)

[66] Hesse Speech at 17. (2013); see also e.g., Microsoft Corp. v. Motorola Inc., 2013 WL 2111217, at *10-11 (W.D. Wash. 2013); 1/8/13 DOJ-PTO Policy Statement at 4; 7/30/13 FTC Statement at 5.

[67] Kieff, F. Scott and Anne Layne-Farrar. (2013). Incentive effects from different approaches to holdup mitigation surrounding patent remedies and standard-setting organizations. Journal of Competition Law and Economics 0: 1 – 33.

two factors: (i) the incremental value that the technology brings to the licensees; and (ii) the availability of substituting technologies offered by other patent holders.[68]

3.2.5. However, after the technology has been deemed essential and included in a particular standard (i.e. asset specificity), the amount of royalty that the SEP holder is able to charge might be in excess of the incremental value that its technology brings to the licensees. This happens as the SEP holder is no longer constrained by the availability of substituting technologies given that such technologies would have been eliminated as part of the standard setting process. When the SEP holder is able to extract such royalty in excess of the *ex-ante* royalty rate, a patent hold-up has resulted.

3.2.6. The ability of an SEP holder to extract royalty rates in excess of the *ex-ante* rates is further enhanced when licensees make significant investments based on the standard and become "locked-in" to the standard as the costs of switching to an alternative standard might be prohibitively high. In turn, the SEP holder could exploit (i.e. self-interest seeking with guile or deception) such a lock in mechanism (in the form of prohibitive switching costs) to extract higher royalties that might not be a true reflection of the incremental value of the technology. Instead, the higher royalties reflect the incremental market power conferred to the SEP holder as a result of the elimination of competing technologies in the standard setting process and investments made by licensees.[69]

3.2.7. In light of the above discussion, FRAND commitments are helpful in the following ways. Firstly, FRAND commitments serve to deter SEP holders from exercising the incremental market power that is conferred on them after their technology has been incorporated into a standard. Secondly, FRAND commitments provide a degree of assurance for licensees, especially those who have made significant upfront investments into the standard, that their investments would not be exploited by SEP holders who may coerce them into paying excessive royalty rates; and that the essential patented technologies are available for licensing on a FRAND basis.[70]

3.3. ***FRAND commitments to curb ex-post opportunistic behaviour by SEP holder: Discrimination***

3.3.1. The standard setting process could also give rise to another *ex-post* opportunistic behaviour of the SEP holder – discriminatory behaviour against

[68] Carlton, D. W., & Shampine, A. L. (2013). *An economic interpretation of FRAND*. Journal of Competition Law and Economics, 9(3), 531-552.
[69] Carlton, D. W., & Shampine, A. L. (2013). *An economic interpretation of FRAND*. Journal of Competition Law and Economics, 9(3), 531-552.
[70] Geradin, Damien, (2014). *Reverse Hold-ups: The (Often Ignored) Risks faced by Innovators in Standardized Areas*. The Pros and Cons of Standard Setting 2010, Swedish Competition Authority.

downstream licensees. Such discriminatory behaviour arises especially when the standard setting process involves the collective action of a group of competitors coming together to vote on the patented technology to be included in a standard.

3.3.2. Discriminatory behaviour of the SEP holder could either take on the form of a unilateral or joint conduct. In the case of the former, the SEP holder can choose to discriminate against certain licensees by varying the relative licensing terms offered to such licensees relative to others. In the case of the latter, it could manifest in the form of collusion between the SEP holder and a subset of licensees seeking for relatively favourable treatment (e.g. lower royalty rates) as compared to a fellow competitor(s).[71] Seen in this context, the promise of favourable treatment can be thought of as a quid pro quo: in exchange for including the technology of the SEP holder into the standard, the SEP holder commits to granting favourable licensing terms to these licensees.

3.3.3. Favourable licensing terms are problematic as they do not just distort competition among existing players but could also be used to shield existing players from future competition.[72] In particular, the SEP holder could license its technology on unfavourable terms to new entrants to put them at a competitively disadvantageous footing.

3.4. *FRAND commitments to curb ex-post opportunistic behaviour by SEP licensee: Hold-out*

3.4.1. While the preceding sections covered the risks faced by patent licensees arising from being "locked-in" with asset-specific investments to the technologies that are codified in a standard, it is imperative to note that the SEP holders face the risks of being "locked-in" as well. In particular, SEP holders contributing to the standard setting process can be "locked-in" if they can only license their technologies within the market of the standard.[73] Put another way, while the hold-up theory emphasizes the patent licensees' costs of switching away from a particular technology included in a standard, hold-out emphasizes the SEP holders' risks, in particular, the limited or sometimes non-existent opportunities for SEP holders to license their technologies outside of the standard.[74]

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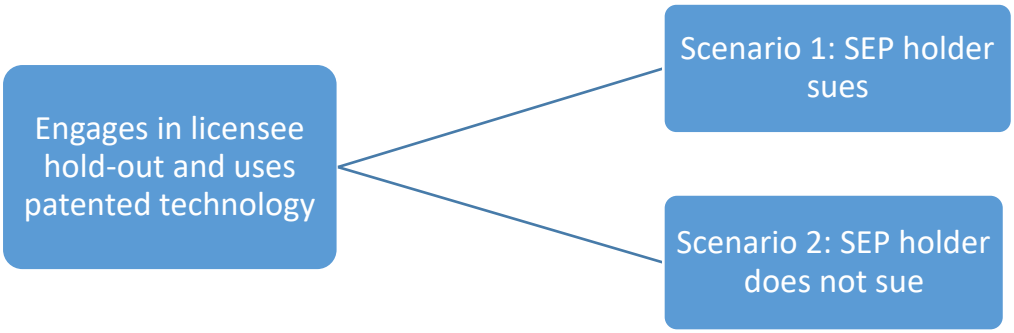
[71] Carlton, D. W., & Shampine, A. L. (2013). *An economic interpretation of FRAND*. Journal of Competition Law and Economics, 9(3), 531-552.
[72] Carlton, D. W., & Shampine, A. L. (2013). *An economic interpretation of FRAND*. Journal of Competition Law and Economics, 9(3), 531-552.
[73] Comment of U.S. Federal Trade Commissioner Joshua D. Wright and Judget Douglas H. Ginshurg on the Canadian Competition Bureau's draft updated Intellectual Property Enforcement Guidelines. (2010). Available at https://www.ftc.gov/system/files/documents/public_statements/734661/150810canadacomment.pdf
[74] Geradin, Damien. (2010). *Reverse Hold-ups: The (Often Ignored) Risks Faced by Innovators in Standardized Areas*. The Pros and Cons of Standard Setting 2010, Swedish Competition Authority.

3.4.2. A more extreme form of hold-out is the case of licensee hold-out where patent licensees simply refuse to take any licence, FRAND or otherwise.[75] In this regard, the standard setting process might exacerbate the issue of licensee hold-out as compared to traditional patent infringement.[76] By the very definition of SEPs, all patented technologies deemed essential to the standard in question, are considered as perfect complements to one another. Therefore, it follows that a patent licensee will have to obtain a licence to the entire portfolio of essential patents, instead of on a piecemeal basis. Moreover, SEP holders often hold multiple patents across various jurisdictions. The number of patents involved is hence vastly different from the traditional patent scenario. As such, for practical reasons, SEPs are licensed on a FRAND basis at the portfolio level. However, the practice of portfolio licensing has legal implications when it comes to litigation. In particular, an SEP holder cannot assert an entire SEP portfolio due to a constraint of its resources. Such a constraint is particularly acute for worldwide SEP portfolios where litigation often proceed on a country basis.[77]

3.4.3. In light of the aforementioned difference, a licensee hold-out might present itself as an appealing *ex post* opportunistic behaviour for some licensees. For the illustrative purposes, we consider the following game tree for a rogue licensee who is contemplating whether to engage in licensee hold-out or otherwise:

Diagram 2: Game Tree Decision of a Rogue Patent Licensee



3.4.4. For the rogue patent licensee who is contemplating a licensee hold-out strategy, there could be two possible outcomes. Firstly, the SEP holder sues the patent licensee for infringing its patented technology ("**Scenario 1**"). Alternatively, the SEP holder does not sue the patent licensee ("**Scenario 2**"). In the latter

[75] Chien, Colleen. (2014). "Holding up" and "Holding Out". Michigan Telecommunications & Technology Law Review 21:1.
[76] Layne-Farrar, Anne. (2016). *The Economics of FRAND*. Antitrust Intellectual Property and High Tech Handbook, Cambridge University Press, Daniel Sokol ed., Forthcoming.
[77] Layne-Farrar, Anne. (2016). *Why patent holdout is not just a fancy name for plain old patent infringement*. CPI, 1-4.

scenario, given that the SEP holder does not sue, the game tree ends. It is clear why the licence hold-out strategy might appeal to some licensees given that there is a possibility of the SEP holder not suing, and the probability of this is likely higher in a standard setting context due to a greater constraint of an SEP holder's resources in enforcing entire SEP portfolios. Even if the rogue patent licensee does not refuse to take a licence outright, it could still adopt a hold-out strategy to extract an unfair advantage for itself in the licence rates and terms. FRAND terms therefore also assist to ensure fairness to SEP holders (and other patent licensees who are not able to execute out a hold-out strategy).

3.4.5. In summary, FRAND commitments are necessary to address the *ex-post* opportunistic behaviour of both SEP holders and licensees that stem from the unique features of the standard setting process. In particular, the economic motivation for FRAND commitments are as follows:

i) Deter SEP holders from exercising any market power they might gain through the standardization process and preserve the benefits of *ex ante* competition by requiring participants to commit to license their IPRs on FRAND terms.

ii) Assure licensees that their commercialization investments will not be exploited and that essential standard technologies are available for licensing on FRAND negotiations.

iii) Compensate SEP holders who participate in SSOs by contributing valuable technologies in a fair and adequate fashion.

4. The motivation for FRAND – Benefits of flexibility

4.1. *Definition of FRAND by SSOs around the world*

4.1.1. We will now turn to look at the underlying economic motivation for the flexibility in the interpretation of FRAND commitments in the standard setting process.

4.1.2. While various SSOs across the world require licensing terms on a FRAND basis, SSOs have not attempted to define FRAND terms more precisely. This includes SSOs not requiring SEP holders to set the specific royalty rate that they would charge when they commit to licensing on FRAND terms.

4.2. *Ambiguity in the interpretation of FRAND commitments*

4.2.1. FRAND commitments are designed broadly so that it may be applied across a variety of industries and to each distinct contractual negotiation as well as be

interpreted by different jurisdictions around the world.[78] This is consistent with the trend of increased technological sophistication which has resulted in the use of an increased number of standards as well as SEPs per standard. Consequently, it is becoming more difficult to come to a consensual interpretation of FRAND commitments.[79]

4.2.2. The broadness and resultant ambiguity of FRAND commitments may also be attributed to the working groups within SSOs. Working groups within SSOs typically comprise engineers who are focused on technical solutions. Issues that could risk the delay of standard development or commercialisation are usually avoided.[80] As a result, the interpretation of FRAND commitments is left to the courts and regulators. However, courts may also be unwilling to determine what a "reasonable price" is due to the difficulty of doing so, since prices are inherently determined by market forces.[81]

4.3. *Trade-offs arising from incomplete contracts?*

4.3.1. The ambiguity associated with FRAND terms allows for contractual flexibility *ex-post*, which can be a considerable source of economic value especially when there is a high level of uncertainty surrounding the value of a technology in a dynamic and constantly evolving market.[82]

4.3.2. However, it is this same attribute that leads it to essentially being viewed as an incomplete contract. Such incompleteness may be taken advantage of by opportunistic SEP holders to "hold-up" its transacting partners. Deterring such opportunism would translate to higher transaction costs required to draft and negotiate enforceable terms to cover for all possible contingencies and all possible products. This may also lead to the standard setting process being slowed down, resulting in significant delays in bring the technology to market and commercialisation of IPRs.[83]

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[78] Arsego, David. (2015). *The Problem with FRAND: How the Licensing Commitments of Standard-Setting Organisations Result in the Misvaluing of Patents*. Brooklyn Journal of International Law, Volume 41, Issue 1, Article 5.

[79] Ménière, Yann (2015). *Fair, Reasonable and Non-Discriminatory (FRAND) Licensing Terms*. European Commission, JRC Science and Policy Report.

[80] Layne-Farrar, Anne. (2011). *Innovative or Indefensible? An Empirical Assessment of Patenting within Standard Setting*. International Journal of IT Standards and Standardization Research 9:1-18.

[81] United States Department of Justice & The Federal Trade Commission (2007). *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition*

[82] Wright, Joshua. (2013). *SSOs, FRAND, and Antitrust: Lessons from the Economics of Incomplete Contracts*. Remarks at the Center for the Protection of Intellectual Property Inaugural Academic Conference: The Commercial Function of Patents in Today's Innovation Economy George Mason University School of Law, Arlington, VA, September 12, 2013.

[83] Ibid.

4.3.3. Despite the risks of opportunism arising from incomplete contracts, reputational costs may reduce the need for highly complete contracts as the incentive to hold-up can be nullified in a "repeated game" setting. As most firms are players who hope to license its SEPs and/or have its patents written into future standards, there is an incentive for such firms to preserve a good reputation. A firm who has a reputation for engaging in "hold-up" or other negative behaviour would face difficulty in having its patents licensed and/or have its patents written into future standards, which would reduce the firm's profitability.[84]

4.3.4. Ultimately, there is a trade-off between a more complete contractual specification, which may generate benefits in the form of reducing the expected value of hold-up costs, and the additional costs of precision.

4.4. *Greater balance with ambiguous FRAND?*

4.4.1. The flexibility of FRAND may also help in balancing the interests of SEP holders and licensees. Besides the greater number of patents involved in a standard setting context, another key difference between FRAND litigation and traditional patent infringement is in the legal rules governing infringement damages. For traditional patent infringement damages, Section 284 of 35 U.S. Code states the following[85]:

"*Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement,* ***but in no event less than a reasonable royalty*** *for the use made of the invention by the infringer, together with interest and costs as fixed by the court.*" [**Emphasis added**]

4.4.2. In other words, the above stipulates a lower limit for damages set in traditional patent infringement. While this is true for the patent infringement cases, this does not apply to the case of FRAND litigation cases. Instead, given that the SEP holder has committed to license its patented technology on a FRAND royalty basis, i.e., cap or upper limit on the royalty, the damages for FRAND litigation cases will not exceed the FRAND royalty rate.[86] Diagram 3 revisits the game tree for a rogue patent licensee, but now considering further what can happen if the SEP holder decides to sue the rogue patent licensee.

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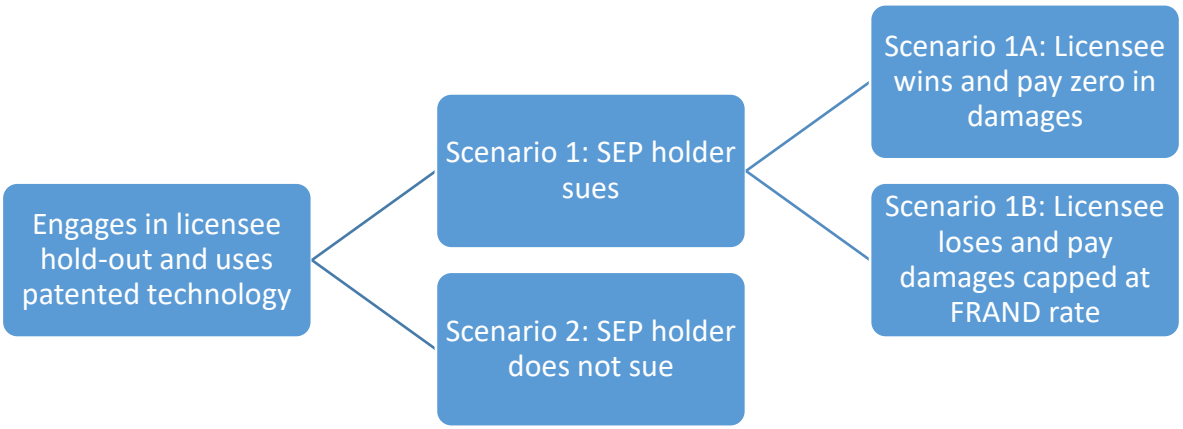
[84] Wright, Joshua. (2013). *SSOs, FRAND, and Antitrust: Lessons from the Economics of Incomplete Contracts*. Remarks at the Center for the Protection of Intellectual Property Inaugural Academic Conference: The Commercial Function of Patents in Today's Innovation Economy George Mason University School of Law, Arlington, VA, September 12, 2013.

[85] 35 U.S. Code Section 284 – Damages. Available at https://www.law.cornell.edu/uscode/text/35/284

[86] Layne-Farrar, Anne. (2016). *Why patent holdout is not just a fancy name for plain old patent infringement*. CPI, 1-4.

Diagram 3: Game Tree Decision of a Rogue Patent Licensee



4.4.3. In the case of Scenario 1 where the SEP holder sues the rogue patent licensee for infringement, there could be two possible outcomes attached to each outcome. The court could either decide the litigation in the licensee's favour, in which case it will pay nothing in damages ("**Scenario 1A**"); or the court could find an infringement ("**Scenario 1B**"), in which case the court might either issue an injunction against the rogue patent licensee, which might lead to the negotiation of a FRAND licence; or order the rogue patent licensee to pay the damages due to the SEP holder. In either case, the damages are capped at the FRAND royalty rate, which can help to ensure that the final licence terms are fair to both the SEP holder and licensee based on the circumstances.[87]

4.4.4. As illustrated in the above game tree decision, the licensee hold-out strategy becomes more appealing as the (i) probability of SEP holder suing and (ii) probability of an unfavourable court judgement (i.e. Scenario 1B) decreases, since the expected loss of the rogue patent licensee decreases (and correspondingly the benefit of holding out increases).[88] Flexibility in the FRAND terms, however, allows for the SEP holder to be compensated fairly in varying circumstances and increases the uncertainty a rogue patent licensee faces in the FRAND royalty rate. For example, the FRAND rate may be higher if the rogue patent licensee has already derived great benefit from using the patented technology during its hold-out. This flexibility, therefore, may assist in the balancing of interests between SEP holders and licensees.

[87] If instead there is no hold-out, the patent licensee would take a FRAND licence, which again helps to ensure fairness between the SEP holder and the licensee.

[88] The underlying assumption of this hypothetical scenario is that the licensee will have to pay the FRAND royalty rate with certainty in the absence of any hold-out strategy.

5. FRAND commitments as a behavioural remedy for non-SEP cases?

5.1.1. Based on the above discourse on the economic motivation for FRAND commitments as well as the flexibility associated with the ambiguous interpretation of FRAND commitments in the SEP and standard-setting domain, we can see why FRAND commitments are a preferred behavioural remedy by SSOs. Firstly, FRAND commitments are useful in deterring SEP holders, whose technologies are codified within a standard, from abusing the market power conferred to them through the standard setting process. Secondly, FRAND commitments are useful in maintaining the balance between the interests of SEP holders (who are seeking a fair/reasonable compensation for their risky investments in R&D for the development of their proprietary technologies) and that of the licensees (who are seeking access to these proprietary technologies codified within a standard at a fair/reasonable price). Finally, the flexibility offered by the ambiguous interpretation of FRAND commitments is especially useful in the face of uncertainty which is rife in the standard setting process for (e.g. the value of the patented technology included in a standard).

5.1.2. We note that certain circumstances commonly found in the SEP and standard-setting domain may drive the above motivations for FRAND commitments. We put forth the proposition that such circumstances may also be present in non-SEP cases where FRAND commitments can be especially useful in addressing competition concerns. These circumstances are where[89]:

a) The underlying value of the focal product is intangible (or future value of the focal product is uncertain); or

b) Innovation/investment is important for competition. The use of FRAND commitments preserves the incentives for market players to innovate and invest as they are not overly-distortive unlike approaches such as price regulation; or

c) There is a significant change in the market power pre and post-event (e.g. in the event of a merger). The use of FRAND commitments helps to limit the exercise of market power arising from the event while balancing the interest of parties.

5.1.3. While it is not the intent of this paper to prove the above proposition, we will take a closer look at the application of FRAND commitments in addressing competition concerns arising in non-SEP cases and show that such cases corroborate with our proposition in the following sections.

[89] For the avoidance of doubt, these circumstances, where FRAND commitments are applicable, are not cumulative in nature.

6. Non-SEP cases involving FRAND commitments in EU

6.1. *EC Decision – Case M.7194 – Liberty Global/Corelio/W&W/De Vijver Media*[90]

6.1.1. While uncommon, FRAND commitments have also been used in competition law cases outside the SEP field. One such case was the transaction where Liberty Global PLC ("**Liberty Global**"), along with the undertakings Waterman & Waterman NV ("**W&W**") and Corelio Publishing NV ("**Corelio Publishing**") would acquire joint control of De Vijver Media NV ("**De Vijver Media**") by way of purchase of shares ("**the De Vijver Media Transaction**"), which was conditionally cleared by the European Commission ("**EC**") with commitments in 2015.[91]

6.1.2. Liberty Global provides TV, internet and telephony services via its cable networks in several countries in Europe. Liberty Global is the controlling shareholder of Telenet which owns and operates a cable network. Telenet is a TV distributor with a significant degree of market power due to its high market share in the market for the retail provision of TV services.

6.1.3. De Vijver Media is a TV broadcaster that owns two Dutch-language TV channels, Vier and Vijf, which are an important input for TV distributors due to their popularity with Dutch-speaking consumers in Belgium.

6.1.4. TV distributors typically pay TV broadcasters to carry their channels on their cable TV networks while charging end-consumers for a cable TV subscription. Besides earning revenue from TV distributors, TV broadcasters also earn revenue through advertisements on their channels.

6.1.5. Given Telenet's significant degree of market power, there were concerns that the merged entity may have the ability and incentive to engage in customer foreclosure by (i) denying rival TV broadcasters access to its cable TV network; or (ii) by making rival TV broadcasters' content less accessible by for example, positioning rival channels lower in the channel list.

6.1.6. Similarly, given the importance of the Vier and Vijf channels to TV distributors, there were concerns that the merged entity may have the ability and incentive to engage in input foreclosure by (i) refusing to license the Vier and Vijf channels to rival TV distributors; (ii) raising the price of the same channels; or (iii) discriminating against rival TV distributors in other ways.

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[90] EC Decision – *Case M.7194 – Liberty Global/Corelio/W&W/De Vijver Media*, dated 24 February 2015.

[91] The authors understand that this is not the first case where FRAND commitments were used by the EC in non-SEP cases. See also Case M.6800 – PRSfM/STIM/GEMA/JV dated 16 June 2015.

6.1.7. While the EC was reviewing the De Vijver Media Transaction, Telenet proposed changes to its carriage agreements with TV broadcasters VRT and Medialaan, the closest competitors to the channels Vier and Vijf. The changes to the carriage agreements set the conditions under which Telenet would distribute the channels of VRT and Medialaan, including the fees that Telenet would have to pay. These amendments removed the EC's customer foreclosure concerns.

6.1.8. Likewise, De Vijver Media entered into new carriage agreements with several TV distributors including Belgacom, Telenet's largest rival TV distributor by far, during the EC's review of the De Vijver Media Transaction. While these carriage agreements had reduced the risk of input foreclosure, they had not entirely removed the EC's concerns on input foreclosure given that the agreements did not cover all rights linked to the broadcast of Vier and Vijf and since potential new entrants did not have a carriage agreement.

6.1.9. To address the remaining competition concerns on input foreclosure, the EC accepted commitments from the notifying parties where the central element was the commitment to ensure that De Vijver Media would meet all reasonable requests from TV distributors to distribute the channels Vier, Vijf and any future basic pay TV channel on FRAND terms.

6.1.10. In response to the market testing of the commitments, several respondents mentioned that FRAND was not sufficiently concrete to determine the conditions under which the channels covered by the commitments would have to be licensed. While the EC acknowledged that FRAND may be abstract, it took the view that FRAND terms were the most appropriate way to define the terms under which the channels should be licensed. It noted that the commitments "*may be relied upon by various TV distributors, using different technologies, with a different footprint, and offering different rights to their end users*". Given the variety, the EC did "*not consider it appropriate to specify in greater detail the conditions under which the channels should be licensed*".[92]

6.1.11. The commitments provide for a dispute resolution process where claims by any third-party ("**Requesting Party**") that the notifying parties or the legal entity operating one or several channels ("**Channel Operator**") were failing to comply with the commitments shall be made through a written request to the notifying parties or Channel Operator, setting out in detail reasons leading the Requesting Party to believe that the commitments were not being complied with. The Requesting Party and the Channel Operator would be required to use their best efforts to resolve all differences of opinion and to settle all disputes that may arise through co-operation and consultation within a reasonable period of time not exceeding fifteen (15) working days after receipt of the request. The appointed Monitoring Trustee, an independent party which has the

[92] See paragraph 655 of EC Decision – *Case M.7194 – Liberty Global/Corelio/W&W/De Vijver Media*, dated 24 February 2015.

responsibility of monitoring the notifying parties' compliance with the commitments, would also be required to present its own proposal for resolving the dispute within eight (8) working days, specifying in writing the action, if any, to be taken by the Channel Operator in order to ensure compliance with the Commitments vis-à-vis the Requesting Party, and be prepared, if requested, to facilitate the settlement of the dispute. Should the Requesting Party and Channel Operator fail to resolve their differences, the Requesting Party would be required to serve a notice to the Belgian Centre for Arbitration and Mediation ("**CEPANI**") to request for arbitration.

6.1.12. As can be seen in this case, FRAND commitments may have potentially wider applications beyond the SEP context. While the definition of FRAND terms are ambiguous, it is precisely this characteristic that offers a high degree of flexibility for FRAND terms to be tailored and applied on a case-by-case basis to context specific situations. The flexibility of FRAND terms also does not restrict innovation and allows the notifying parties to respond to changing market conditions. Furthermore, as mentioned in the preceding sections, adopting more precise terms and conditions might translate to higher costs due to the need for anticipating a higher number of contingencies and negotiations on how to cater for these contingencies. Also, in line with our earlier proposition, we note that the case in point involved copyrighted products such as TV content with intangible value, where FRAND commitments may be especially useful.

6.1.13. Similar to FRAND commitments in SEP cases, the parties in this EC case are also required to, as far as possible, resolve their disputes bilaterally. As such, the use of FRAND commitments in this case can also be seen to serve the objective of striking a balance between the interests of the notifying parties and its customers given the wide scope for negotiation due to the flexibility of FRAND terms, as well as the dispute resolution process.

6.1.14. Finally, the use of FRAND commitments serves to curb the merged entity's exercise of the *ex-ante/ex-post* change in market power arising from the De Vijver Media Transaction.

7. CCCS's past cases involving FRAND commitments

7.1. *CCCS's Case 1: Acquisition of the Penguin Group Companies by Times Publishing Limited ("Times-Penguin Merger")*[93]

7.1.1. The first CCCS case where FRAND commitments were used was in the acquisition of Penguin Random House Pte Ltd. and Penguin Books Malaysia Sdn. Bhd. ("**the Penguin Group Companies**") by Times Publishing Limited ("**TPL**") ("**the Times-Penguin Merger**"), which was conditionally cleared with commitments in 2017. The Times-Penguin Merger also entailed the Penguin Group Companies entering into an exclusive distribution agreement with Penguin Books Limited, The Random House Group Limited, Penguin Random House LLC and Dorling Kindersley Limited ("**the Publishers**") to distribute English booked titles (in physical format) published by the publishers in Singapore, Malaysia and Brunei ("**the Distribution Agreement**") upon completion of the acquisition.

7.1.2. TPL provides publishing, printing, distribution and retail services for print trade books in Singapore, and worldwide, through its various subsidiaries. TPL has a number of registered entities in Singapore, in particular, Pansing Distribution Private Limited ("**Pansing**"), which is principally involved in the distribution of books and magazines; and Times the Bookshop Pte. Ltd. ("**TTB**"), which is principally involved in the retail of books, stationery magazines and periodicals.

7.1.3. The Penguin Group Companies are wholly-owned by Penguin Random House Limited ("**PRH**"), which is in turn part of the Penguin Random House group of companies, a global trade book publishing group which also includes the Publishers. In Singapore, the Penguin Group Companies are principally involved in the provision of marketing and distribution of English-language only print trade books via physical platforms.

7.1.4. The supply chain of print trade books consists of the upstream acquisition of publishing rights by distributors and the downstream sale of print trade books to retailers as well as marketing and promotional activities.

7.1.5. **Figure 1** and **Figure 2** below illustrate the changes in ownership and distribution arrangements before and after the Times-Penguin Merger.

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[93] CCCS' Grounds of Decision in relation to the *proposed acquisition by Times Publishing Limited of Penguin Random House Pte. Ltd. and Penguin Books Malaysia Sdn. Bhd.*, dated 25 September 2017.

Figure 1: Schematic Overview of the Proposed Acquisition

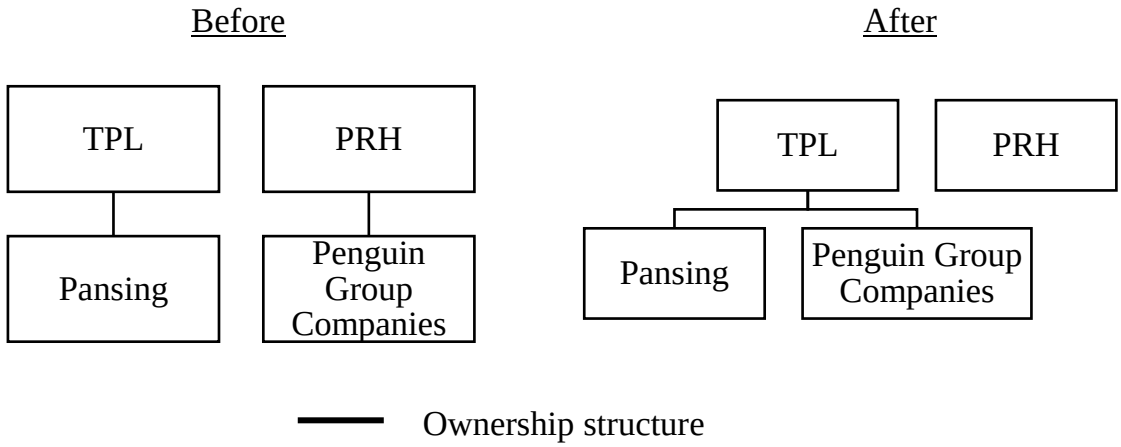
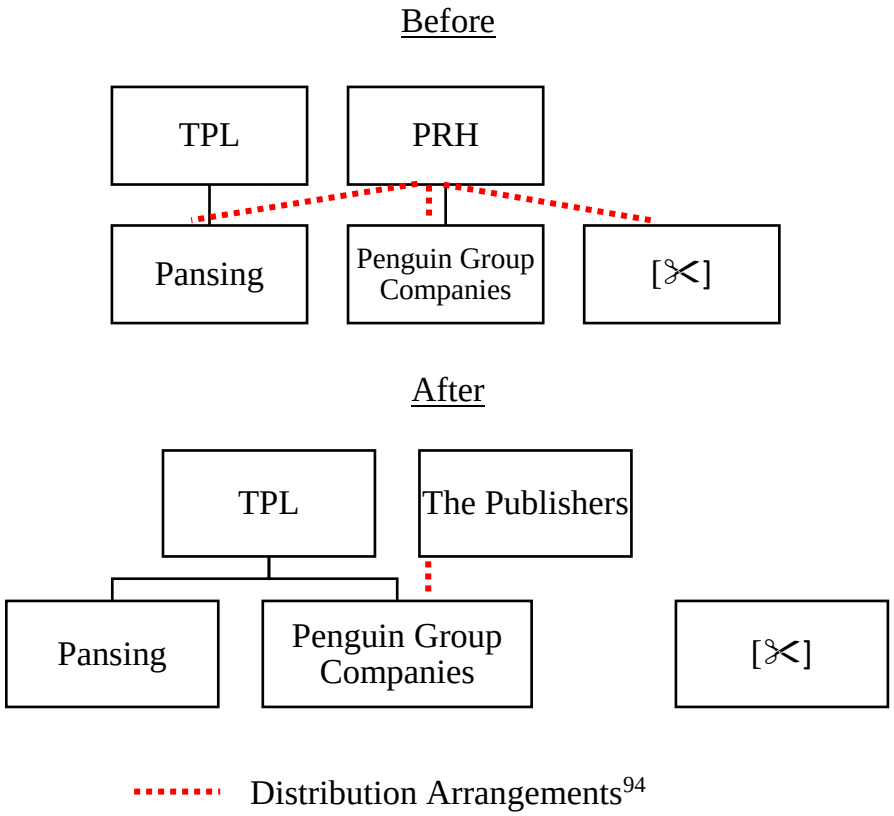


Figure 2: Schematic Overview of the Distribution Arrangements



7.1.6. Prior to the Times-Penguin Merger, the Penguin Group Companies were not affiliated with any book retailer in Singapore, and books published by PRH were sold by different distributors to retailers. Post-Merger, the Publishers' titles would be distributed exclusively by the merged entity, which would be affiliated with a downstream retailer, namely TTB. In this regard, there were

[94] The distribution arrangements before the Times-Penguin Merger were exclusive to each distributor for different titles of PRH.

concerns that the merged entity would have the ability and incentive to discriminate or restrict supply of the Publishers' titles to other retailers.

7.1.7. To address the competition concerns, CCCS accepted commitments from TPL whereby TPL committed to supply to third-party retailers the full range of books by the Publishers on a FRAND basis during the period of exclusive distribution. As part of the commitments, a Monitoring Trustee was appointed to monitor TPL's compliance with the commitments.

7.1.8. Given that the future value of the books is uncertain, especially for forthcoming titles, and that effective prices charged by book distributors to book retailers typically depend on a myriad of factors including the cost of servicing, credit performance, order volume and location of the respective book retailer, the use of FRAND commitments in this case allows the merged entity to maintain flexibility and offer different effective prices to each respective book retailer, according to their characteristics and circumstances. The use of FRAND commitments also does not stifle innovation and would allow the merged entity to respond to changing market conditions. In addition, as mentioned previously, adopting more precise terms and conditions might translate to higher costs due to the need for anticipating a higher number of contingencies and negotiations on how to cater for these contingencies. Similar to the preceding case, this case involved the distribution rights to print content with intangible value.

7.1.9. In this case, the use of FRAND commitments also serves the objective of striking a balance between the interests of TPL and other third-party retailers given that it allows for the wide scope for negotiation due to the flexibility of FRAND terms.

7.1.10. Finally, the use of FRAND commitments serves to curb the merged entity's exercise of its *ex-ante/ex-post* change in market power arising from the Times-Penguin Merger.

7.2. *CCCS's Case 2: Investigation into alleged refusal to supply by lift spare parts suppliers*[95]

7.2.1. The second set of CCCS cases involving FRAND commitments were CCCS's investigations into the alleged refusals to supply proprietary but essential lift spare parts by original lift installers to third-party contractors for the maintenance of lifts in Housing Development Board ("**HDB**") estates[96].

[95] CCCS's media release on *CCCS's investigation into restrictive industry practices in the supply of lift spare parts in HDB estates* dated 14 July 2016, CCCS's media release on *CCCS's public consultation in relation to voluntary commitments proposed by suppliers of lift spare parts* dated 15 November 2017; CCCS' media release on *CCCS's acceptance of voluntary commitments by suppliers of lift spare parts* dated 28 March 2018.

[96] HDB estates refer to a cluster of public housing provided by HDB, a statutory board under the Singapore Government.

7.2.2. In Singapore, town councils are required to carry out regular lift maintenance for lifts installed in HDB estates. There are typically multiple brands of lifts installed in each HDB estate. Town councils can choose to either appoint the original lift installers of the respective brands to undertake the maintenance services, or to call for a tender to invite companies, including third-party lift maintenance contractors to provide lift maintenance services for all the lift brands of lifts within the estate. However, if the third-party lift maintenance contractors cannot obtain the lift spare parts for each lift brand, town councils may be reluctant to choose third-party lift maintenance contractors (which may be able to provide the lift maintenance services at lower cost and better service quality) as compared to the original lift installer.

7.2.3. Based on the above, there were concerns that original lift installers may be dominant and that their refusal to supply essential spare parts to third-party contractors may have effectively prevented such contractors from competing for contracts for the maintenance of lifts.

7.2.4. To address the competition concerns, CCCS had separately accepted commitments from two original lift installers, BNF Engineering (S) Pte. Ltd. ("**BNF**") and C&W Services Operations Pte Ltd ("**CWO**"). The commitments provide that BNF and CWO would undertake to sell lift spare parts of the relevant brands to a purchaser on a FRAND basis.

7.2.5. Given the prices charged by original lift installers to lift maintenance companies for spare parts may depend on various factors such as credit performance, order volume and intangible value of the proprietary rights, the use of FRAND commitments in this case allows the respective original lift installers to maintain flexibility on their pricing structure for the sale of spare parts as well as to offer different prices to third-party lift maintenance companies according to their characteristics and circumstances. Similar to the Times-Penguin Merger, the use of FRAND commitments does not stifle innovation and would allow the entity to respond to changing market conditions, while avoiding the costlier effort of adopting more precise terms and conditions.

7.2.6. The use of FRAND commitments also serves the objective of striking a balance between the interests of respective original lift installers and third-party lift maintenance companies given that it allows for the wide scope for negotiation due to the flexibility of FRAND terms.

7.2.7. In this case, there is an *ex-ante/ex-post* change in market power in the aftermarket arising from the installation of lifts. While, unlike the SEP and standard-setting situation[97], the commitments were offered when the original

[97] In the SEP and standard-setting situation, commitments are offered *ex-ante* in a pre-emptive manner, i.e., before the SEP holder gains market power from the acceptance of its patented technology into the standard. In this case, investigations were conducted *ex-post*, i.e., after market power may already have arisen due to the installation of certain lifts and correspondingly, commitments were offered after some market power may already exist.

lift installers may already possess market power for some existing lifts, the FRAND commitments are forward-looking and can curb the exercise of *ex-post* market power arising from the installation of new lifts.

8. Challenges in the application of FRAND Commitments in SEP and non-SEP domains

8.1.1. As can be seen in the preceding section, FRAND commitments can be useful in addressing vertical effects where there are competition concerns relating to pricing and/or access arising from an entity's exercise of market power. To further illustrate this, we compare the usefulness of FRAND commitments against the hypothetical use of price caps as a behavioural remedy to address the competition concerns in the two abovementioned cases that CCCS has dealt with.

8.1.2. Firstly, the use of price caps would require precise and rigid parameters to be defined upfront, which may be difficult to do; and pose a risk of distorting the affected market. The task of setting an appropriate price caps is further complicated in situations such as in markets where the future value of the products is intangible or uncertain, pricing is volatile; products or services are differentiated rather than homogenous; and prices are negotiated on an individual basis. FRAND commitments, on the other hand, offer greater flexibility to parties in terms of pricing structure for instance, prices may be individually negotiated and adjusted. Secondly, setting price caps, e.g. to cost levels, might deprive the parties the rewards that they deserve to reap at the ex-ante level of market power and thereby, dampen future innovation efforts by industry players. In contrast, FRAND commitments provide broad guiding principles (i.e. fairness, reasonableness and non-discriminatory) whilst preserving market-driven pricing as well as incentives for future innovation.

8.1.3. However, while the ambiguity of FRAND commitments confers the benefits of (i) maintaining the balance between the interests of parties offering commitments ("**Offering Parties**") and other third-parties; and (ii) providing flexibility for the Offering Parties to respond to specific circumstances and changing market conditions, it is the same ambiguity that gives rise to the main challenge in its application, namely, the uncertain interpretation as to what constitutes "fair, reasonable and non-discriminatory". The interpretation of what FRAND can be is a difficult fact specific inquiry even in the SEP domain, thus allowing for the risk of disputes between the parties involved.

8.1.4. To mitigate against the risk of disputes and resolve them should the need arise, competition authorities may, in accepting commitments, adapt and apply the

"ping-pong framework" as detailed in the preceding sections, and/or some form of dispute resolution process. This could entail instituting a formal process where claims made by third-parties ("**Disputing Parties**") against Offering Parties for non-compliance are be required to be submitted in writing to Offering Parties and resolved between them within a reasonable timeframe on a good faith and best endeavours basis in the first instance.

8.1.5. An appointed independent Monitoring Trustee could be tasked with facilitating the settlement of the dispute, with responsibilities including providing its views on whether the commitments have been breached; and providing a proposal for resolving the dispute together with the necessary steps that Offering Parties have to undertake in order to ensure compliance with the commitments. In assessing compliance with the commitments, the Monitoring Trustee could employ the use of benchmarking techniques such as comparing prices charged by the Offering Parties with other comparable products; and/or, in the case of mergers, prices charged by the Offering Parties pre-merger.

8.1.6. The process could also prescribe alternative dispute resolution mechanisms such as mediation, neutral evaluation or arbitration for disputes that cannot be resolved bilaterally. The outcome of such disputes could also be made publicly known, so as to facilitate the settlement of future disputes.

9. Conclusion

9.1.1. In conclusion, FRAND commitments may be useful in non-SEP competition cases as they allow for the balance of interests between Offering Parties and relevant third-parties and provide flexibility for Offering Parties to respond to specific circumstances and changing market conditions.

9.1.2. FRAND commitments may be especially useful in circumstances where:

a) Intangible costs are involved; or

b) Innovation/investment are important for competition; or

c) There is a change in *ex-ante/ex-post* market power.

9.1.3. While this paper explored the economic rationale for the use of FRAND commitments, together with its applicability to non-SEP cases, there is still much debate in courts and authorities across the world as to what constitutes "fair, reasonable and non-discriminatory" terms. There is therefore scope for further research in this area. Further research could also be carried out to delve

in greater detail various issues that can arise from the enforcement of FRAND commitments in the non-SEP domain when they are used as a behavioural remedy in addressing competition concerns.