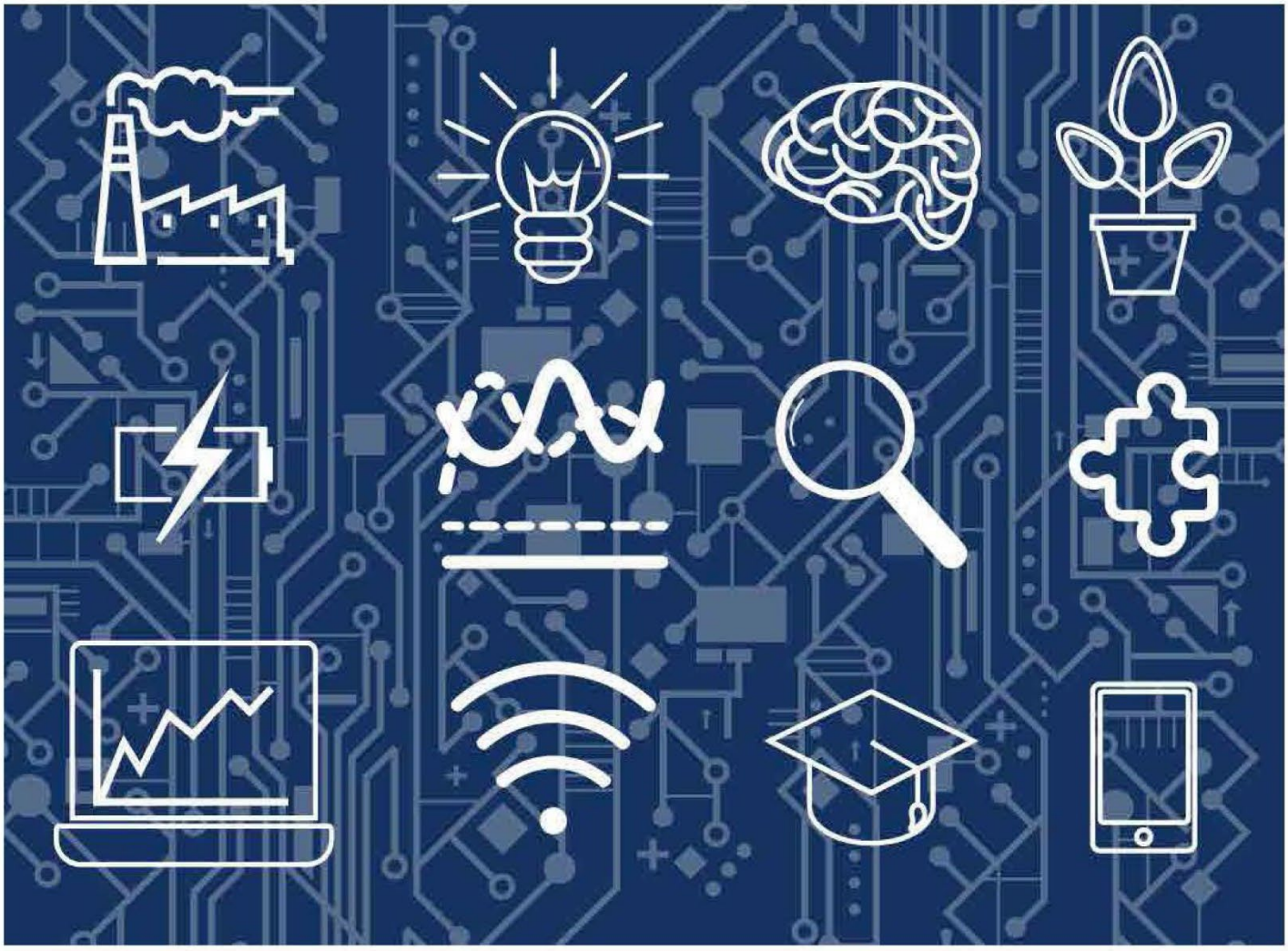
Intellectual Property Office

Rate-setting for Standard-Essential Patents

International evidence and analysis



Intellectual Property Office is an operating name of the Patent Office

Jorge L. Contreras is a Distinguished University Professor, the James T. Jensen Endowed Professor for Transactional Law and Director of the Program on Intellectual Property and Technology Law at the University of Utah S.J. Quinney College of Law, in Salt Lake City, Utah, USA. He served as a Visiting Fellow at the London School of Economics and Political Science from January to May 2023. Prior to entering academia, Professor Contreras was a partner at the international law firm Wilmer Cutler Pickering Hale and Dorr LLP where he practiced intellectual property transactional law in Boston, Washington DC and London. Prof. Contreras's academic research focuses on intellectual property, antitrust law, technical standardization and science policy. He has published more than 150 academic articles and book chapters and has written or edited twelve books including the 2-volume *Cambridge Handbook of Technical Standardization Law* (NY: Cambridge Univ. Press, 2017, 2019). Professor Contreras has appeared before the US Senate and House of Representatives subcommittees on Intellectual Property, the Federal Trade Commission and the European Commission, and as an expert witness before courts in North America, South America and Europe. His academic casebook, *Intellectual Property Licensing and Transactions: Theory and Practice* (NY: Cambridge Univ. Press, 2022) has been adopted for use in classrooms across the United States and beyond. He is an elected member of the American Law Institute and the former co-chair of the National Conference of Lawyers and Scientists. He received his JD with honors from Harvard Law School, earned his BSEE and BA degrees with honors at Rice University and clerked for Chief Justice Thomas R. Philips of the Texas Supreme Court.

ISBN: 978-1-915090-64-5

Rate-setting for Standard-Essential Patents

Published by The Intellectual Property Office July 2025

1 2 3 4 5 6 7 8 9 10

Any enquiries regarding this publication should be sent to:

The Intellectual Property Office
Concept House
Cardiff Road
Newport
NP10 8QQ

Tel: 0300 300 2000

email:research@ipo.gov.uk

This publication is available from our website at www.gov.uk/ipo

RATE-SETTING FOR STANDARDS-ESSENTIAL PATENTS:

INTERNATIONAL EVIDENCE AND ANALYSIS

Prepared by:

Jorge L. Contreras, J.D.
University of Utah S.J. Quinney College of Law
Salt Lake City, Utah, USA

for the

United Kingdom Intellectual Property Office

Under
Project C3198
Provision of SEPs Research - Evidence on policies to improve price predictability of implementing standards: Rate setting boards and aggregate royalty rate setting

27 March 2024

[revised 1 July 2025]

CONTENTS

ABOUT THE AUTHOR

Jorge L. Contreras is a Distinguished University Professor, the James T. Jensen Endowed Professor for Transactional Law and Director of the Program on Intellectual Property and Technology Law at the University of Utah S.J. Quinney College of Law, in Salt Lake City, Utah, USA. He served as a Visiting Fellow at the London School of Economics and Political Science from January to May 2023. Prior to entering academia, Professor Contreras was a partner at the international law firm Wilmer Cutler Pickering Hale and Dorr LLP where he practiced intellectual property transactional law in Boston, Washington DC and London. Prof. Contreras's academic research focuses on intellectual property, antitrust law, technical standardization and science policy. He has published more than 150 academic articles and book chapters and has written or edited twelve books including the 2-volume *Cambridge Handbook of Technical Standardization Law* (NY: Cambridge Univ. Press, 2017, 2019). Professor Contreras has appeared before the US Senate and House of Representatives subcommittees on Intellectual Property, the Federal Trade Commission and the European Commission, and as an expert witness before courts in North America, South America and Europe. His academic casebook, *Intellectual Property Licensing and Transactions: Theory and Practice* (NY: Cambridge Univ. Press, 2022) has been adopted for use in classrooms across the United States and beyond. He is an elected member of the American Law Institute and the former co-chair of the National Conference of Lawyers and Scientists. He received his JD with honors from Harvard Law School, earned his BSEE and BA degrees with honors at Rice University and clerked for Chief Justice Thomas R. Philips of the Texas Supreme Court.

ABOUT THE IPO

The UK Intellectual Property Office (IPO) - an operating name of the Patent Office - is an Executive Agency of the Department for Science, Innovation and Technology (DSIT). It aims to stimulate innovation and enhance the international competitiveness of British industry and commerce. It offers customers an accessible, high quality, value for money system both nationally and internationally, for granting intellectual property rights. The IPO is a highly successful organisation which, over its 155-year history, has adapted its approach and services to meet changing demands. Its core business and products deliver high quality, cost effective Intellectual Property (IP) rights to customers and its success in these core areas is tied to a much wider range of activities, such as awareness-raising and enforcement. Its customers operate within both the UK and global economies. Further information about the IPO can be found on its website.

ACKNOWLEDGEMENTS

Research assistance for this report was provided by Lillian Kwok, the 2023-24 Maschoff Brennan Intellectual Property Research Scholar at the University of Utah S.J. Quinney College of Law.

SCOPE

This Report does not constitute legal advice. Research for this Report was conducted in late 2023 and has not been updated to reflect subsequent statutory or case law developments, some of which may have been significant. This Report does not provide a detailed review of English law; rather, it presents an overview of rate setting activity from a range of jurisdictions, primarily the United States, for purposes of comparison and discussion.

DISCLOSURES

The author has written extensively about standards and standardization for three decades. As a practicing attorney he has represented numerous standards bodies in the high technology sector, most notably twenty years as the chief legal counsel for the Internet Engineering Task Force. He has also served as an expert witness in standards- and patent-related cases in the United States, Canada, Brazil, Germany, the United Kingdom and India, as well as the European Unified Patent Court, on behalf of both patent holders and product manufacturers. He has received no compensation for the preparation of this Report other than from the UK IPO. Part of this funding was utilized to compensate Lillian Kwok, the 2023-24 Maschoff Brennan Intellectual Property Research Scholar at the University of Utah S.J. Quinney College of Law, for research assistance provided in the preparation of this Report. No funding for the preparation of this Report was provided by the University of Utah or Maschoff Brennan. Views expressed are the author's and not those of UK IPO or the University of Utah. Certain portions of this Report are adapted from the author's prior writings listed in the References. All references to the work of others are cited in the footnotes.

COPYRIGHT

EXECUTIVE SUMMARY

Overview

IPO commissioned this Report to collect and analyze evidence regarding:

(1) the creation of a SEP rate setting board to determine (on a non-binding basis) FRAND rates that can be used in SEP negotiations (i.e., on a bilateral basis between a SEP holder and an implementer), and

(2) the determination of an aggregate FRAND royalty rate (i.e. total maximum price) for the SEPs covering a particular standard, before or shortly after its publication.

The Report evaluates the feasibility of these policies, and their potential effectiveness in improving price predictability in SEP licensing, whilst maintaining innovation incentives and consumer welfare.

Royalty determination and distribution proceedings conducted by rate-setting bodies in a range of industries share similarities with the types of determinations that would be required of a FRAND rate-setting tribunal for SEPs. Namely, multiple parties with divergent interests are involved; the parties are initially permitted to work out an arrangement amongst themselves, but if they cannot, the tribunal's procedures are activated; and the tribunal is empowered to compel discovery, conduct hearings, and otherwise adduce all relevant evidence.

Accordingly, this Report first summarizes, in Part II, the historical and theoretical basis for governmental rate-setting. It then describes in some detail rate-setting procedures in other fields that can offer instructive models for a potential FRAND rate-setting body. These include rate-setting for US interstate transport, one of the first regulated industries and, at certain points in its history, one of the largest; public utilities such as gas, water and electricity; copyrighted works in the UK

and US that are subject to compulsory licensing schemes; pharmaceutical products in the UK and US that are subject to price control and regulation, and the statutory interpleader cause of action in the US that enables multiple parties having claims on a single asset pool to petition a court to assess their claims in a single action to divide those assets equitably.

The Report then turns in Part III to current methods of rate-setting for SEPs, including the private setting of aggregate royalty rates by patent pools, and judicial FRAND rate setting in and non-judicial alternative dispute resolution (arbitration and mediation).

Part IV then summarizes recent proposals that have been made to establish FRAND rates for SEPs by other means. This includes the European Commission's proposed EUIPO SEP Competence Centre, which is intended to maintain a database of European SEPs, to check the essentiality of SEPs to the standards under which they are declared on a sampled basis, and to determine, on a non-binding basis, aggregate FRAND royalty rates for all SEPs covering a particular standard, and rates for particular SEPs and SEP portfolios. This section then describes the proposed US Standard Essential Royalty Act (SERA), which would limit the ability of non-US courts from establishing FRAND royalty rates for US SEPs by creating a new US judicial body having the exclusive authority to determine FRAND rates for US SEPs. Next, it addresses a series of SDO and academic proposals concerning group negotiation of aggregate SEP royalty rates and caps, and an academic proposal for an international, non-governmental tribunal for setting aggregate SEP FRAND rates and allocations. This section then summarizes related proposals that may affect FRAND rate-setting, such as ex ante rate disclosure prior to the publication of a final standard, systems for "checking" the essentiality of declared SEPs and systems for checking the validity of declared SEPs.

Finally, Part V applies the evidence presented in Parts II, III and IV to the specific features of a FRAND rate-setting system that are the

subject of IPO's inquiry, including its legal and institutional setting, decisional scope, and procedural design aspects.

Findings and Recommendations

A. The Legal and Institutional Context for Rate-Setting

1. Institutional Locus

Rate-setting activity occurs across a range of different institutional settings or loci. These include governmental settings, both judicial proceedings and administrative/agency procedures, as well as private settings, which include both private adjudication by a third party (e.g., arbitration) and collective action by private parties. Table 1 (EXS) summarizes the institutional loci for the rate-setting activities discussed in this Report.

Table 1 (EXS)

Institutional Loci for Rate-Setting Activity

Part	**Rate-Setting Function**	**Description**
A.1 - Private (collective)		
III.A	Standards patent pool	Patent holders with pool administrator
IV.C	Group Negotiation within SDOs (License Negotiation Groups and pseudo-pool) (proposed)	SEP holders and/or implementer collective rate negotiation
A.2 - Private (adjudicated)		
IV.D	Global Rate-Setting Tribunal (proposed)	Independent arbitral tribunal

Part	**Rate-Setting Function**	**Description**
III.C	FRAND Disputes (arbitrated)	Independent arbitral tribunal
B.1 - Government (judicial)		
IV.B	US Standard Essential Royalty Court – bilateral FRAND rates (proposed)	Special US federal rate court
III.B	FRAND Disputes (litigated)	National courts
IV.E.2.c	Japanese Hantei Procedure for essentiality checking	Japan Patent Office
II.e	US Performing Rights Organization Copyright Rates	US federal courts
II.I	US asset pools with multiple claimants	Statutory interpleader action in federal court
B.2 - Government (agency)		
IV.A	EUIPO Competence Centre – aggregate and bilateral FRAND rates (proposed)	EU-level agency
II.C	US public utilities	State public utility boards
II.D	US Copyright Compulsory License Rates	Copyright Royalty Board, with appeal to courts
II.F	UK Copyright Rates	UK Copyright Tribunal
II.G.1	US Federal Drug Pricing	Centers for Medicare and Medicaid
II.G.2	US Drug Pricing – State Level	State Prescription Drug Advisory Boards
II.H	UK Drug Pricing	National Health Service (NHS)

The institutional setting in which a rate-setting activity is situated is of critical importance. One of the major differences between governmental and private bodies is the degree to which parties may be compelled to participate in a rate-setting proceeding and abide by its outcome. That is, participation in a governmental proceeding may be made mandatory within the jurisdiction of the authorizing body (e.g., state, federal, supra-national), while participation in a proceeding organized privately generally requires the consent of the participants. Cost is another factor that distinguishes governmental and private institutional proceedings. Governmental institutions are funded by the public purse, while private ones are largely funded by the parties themselves. This being said, governmental bodies can, and usually do, impose fees on parties that avail themselves of governmental procedures (e.g., court filing fees).

In terms of decisional enforcement, institutional differences are less pronounced. Governmental institutions, including courts, act with the authority of the state and may rely on state-backed mechanisms to enforce their decisions. Agency decisions may be enforced either through direct agency action or by recourse to the courts. Decisions of private institutions lack the direct enforcement power of the state, but state-based mechanisms, such as judicial process, may be utilized to enforce private contractual agreements. Likewise, under the New York Convention, private arbitral awards may be enforced through judicial proceedings.

An additional dimension of institutional choice involves transparency and openness. Governmental proceedings are often structured so as to allow public observation and the participation of interested parties. Private proceedings (e.g., rate setting by patent pools and bilateral arbitration), in contrast, generally do not seek to maximize transparency and openness, though these principles have been incorporated into the policy-making procedures of some SDOs.

2. Competition Law Considerations

Though competition laws are not directly applicable to state agencies, member states of the EU are prohibited from enacting or enforcing laws that could diminish the effectiveness of competition rules. This requirement has led to private challenges to legislation and regulation on the ground that it interferes with private competition. Yet the European Court of Justice has consistently held that national legislation fixing prices is not condemned as a private arrangement achieving the same effect.

Unlike rate-setting proceedings conducted under the auspices of a governmental authority, the discussion and negotiation of prices within private settings can give rise to antitrust and competition law concerns. Thus, it is possible that a FRAND rate-setting decision by a non-governmental arbitrator could be challenged on antitrust or competition law grounds, though no such challenge has been identified.

Patent pools covering industry standards have set royalty rates through collective discussions among the pool administrator, participating patent holders and, in some cases, potential licensees. The European Commission has acknowledged that “Technology pools can produce pro-competitive effects, in particular by reducing transaction costs and by setting a limit on cumulative royalties to avoid double marginalisation. The creation of a pool allows for one-stop licensing of the technologies covered by the pool.” The UK CMA, in its 2023 Guidance on Horizontal Agreements, references the EU guidelines.

In reviewing proposed standards-based patent pools under its “business review letter” procedure, the US DOJ indicated that it would not bring an enforcement action to prevent the formation of these pools, provided that they undertook procedural safeguards – such as transparency, nondiscrimination, voluntariness, independence,

essentiality/complementarity and openness -- to limit the potential for anticompetitive conduct.

It has been alleged that policies permitting, or requiring, the exchange of FRAND license rate information among SDO participants would give rise to antitrust and competition law risks by facilitating the improper exchange of information among competitors and encouraging implementers to coordinate the exertion of anticompetitive pressure on SEP holders to reduce their licensing rates to sub-FRAND levels. These concerns have arisen in the context of ex ante rate disclosure requirements, maximum rate caps, collective rate negotiation among SDO participants and even the public disclosure of arbitrated FRAND rates. In most cases, antitrust and competition authorities in the EU, UK and US have not expressed concern with existing FRAND rate disclosure policies.

In 2021, the European Expert Group recommended the formation of implementer collective licensing negotiation groups (LNGs) to negotiate licenses with SEP holders (Proposal 75). This proposal has rekindled the discussion of the permissibility of collective rate agreements under European competition law. Critics of joint negotiation proposals have argued that allowing implementers to negotiate prices with SEP holders on a collective basis could enable those implementers to exert oligopsonistic pressure against SEP holders, thus depressing royalty rates below reasonable levels. Whether or not caused by anticompetitive conduct, other economists have predicted that SEP royalties negotiated collectively will be lower than those that would be negotiated in serial bilateral transactions. Yet others have identified characteristics of SDOs that may reduce the risk of anticompetitive oligopsonistic behavior by implementers in markets for standardized products. These include the involvement of SEP holders in royalty negotiations, the leverage that SEP holders wield in the standardization process, the unpredictability regarding which patented technologies will ultimately be included in a standard, and the practical inability of

product manufacturers to reduce their purchases (i.e., of SEP licenses) to depress prices. Moreover, this author has noted that concerns about joint negotiation of aggregate SEP royalties raise fewer concerns than collective negotiation of rates between groups of implementers and a single SEP holder, as SEP holders can form their own negotiation coalitions to counterbalance any improper leverage by implementer groups.

In 2007 the US antitrust agencies found that joint ex ante activity undertaken by an SDO or its members to establish licensing terms as part of the standard-setting process was likely to confer substantial procompetitive benefits by avoiding hold up that could occur after a standard is set and that such activity should not be condemned as per se illegal, but rather evaluated under the more flexible rule of reason approach.

3. Constitutional Law and Treaty Considerations

Recently, critics have questioned whether the European Commission's EUIPO SEP Centre Proposal may violate the fundamental right to intellectual property under Article 17(2) of the EU Charter and Protocol 1, Article 1 of the European Convention on Human Rights (ECHR), as well as Article 28.2 of the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property (TRIPS Agreement). While the EU Charter permits state regulation of property rights, such regulation may be imposed only "in so far as necessary for the general interest", i.e., in a manner that is not disproportionate or intolerable. Similar claims have been made with respect to the proposal's compliance with the TRIPS Agreement.

B. Decisional Authority of a FRAND Rate-Setting Tribunal

The scope of a FRAND rate-setting tribunal's authority may vary significantly along a number of axes depending on the goals and constraints of its designers. This Section discusses some of the major axes of variation in authority with reference to the evidence collected.

1. Policy Goals

The designers of any new rate-setting body and procedure should first consider the ultimate goal of the contemplated rate-setting activity. Should it exist to benefit consumers while permitting industry to earn a sustainable profit, along the lines of drug pricing boards and utility rate commissions? Or should it create a level market playing field by reducing the leverage of dominant players, as the early ICC sought to do? Or should its principal goal be to foster innovation by channeling financial incentives to private firms that generate new technologies, as some SEP holders might argue? Or should its focus be on returning surplus to manufacturers or consumers of standardized products? Clearly, there is no "right" answer to these questions, yet no procedure can be designed that is entirely neutral with respect to them. Accordingly, the designers of a rate-setting system should make an effort to articulate the ultimate goals of the system and then seek to tailor its procedures to the achievement of those goals.

2. Subject matter authority

It is important, at the outset, to specify the matters within a rate-setting tribunal's competency to decide. In the case of a FRAND rate-setting body, the determination of bilateral and aggregate FRAND royalty rates would be required. The determination of aggregate FRAND rates should also encompass an allocation of the aggregate royalty among individual SEP holders. To make these determinations, a tribunal may also be required to consider issues of patent validity and essentiality. However, in order to retain the tribunal's focus on the complex and detail-oriented task of rate-setting, its authority probably should not

extend to other claims between the parties (e.g., breach of contract, antitrust/competition law, patent misuse, fraud, inequitable conduct), which should be adjudicated in court or arbitration. This limitation is generally consistent with other rate-setting procedures, other than those handled directly by courts.

3. Binding versus Non-Binding Decisions

A fundamental question that will shape a rate-setting tribunal is whether its decisions will be legally binding on the parties before it or merely advisory in nature. Most of the rate-setting procedures described in this Report result in binding rate determinations, though some are subject to appeal. Table 2 (EXS) below summarizes the binding effect of rate determinations made by the different rate-setting bodies described in this Report.

Table 2 (EXS)

Binding Effect of Rate-Setting Activity

	Rate-Setting Function
Non-Binding	
III.C	FRAND Disputes (mediation)
IV.E.2.c	Japanese Hantei Procedure for essentiality checking
IV.A	EUIPO Competence Centre – aggregate and bilateral FRAND rates (proposed)
Binding, with procedural appeal	
III.B	FRAND Disputes (litigated)

	Rate-Setting Function
IV.B	US Standard Essential Royalty Court – bilateral FRAND rates (proposed)
II.C	US state public utility commissions
II.D	US Copyright Compulsory License Rates
II.E	US Performing Rights Organization Copyright Rates
II.F	UK Copyright Rates
II.I	US asset pools with multiple claimants
Binding, no procedural appeal	
III.A	Standards patent pool
III.C	FRAND Disputes (arbitrated)
IV.C	Group Negotiation within SDOs (License Negotiation Groups and pseudo-pool) (proposed)
IV.D	Non-Governmental FRAND Tribunal (proposed)
II.G.1	US Federal Drug Pricing
II.G.2	US Drug Pricing – State Level
II.H	UK Drug Pricing

Rate determinations that are non-binding are advisory only and parties cannot be compelled to abide by them, at least not by the bodies making those determinations. Nevertheless, non-binding determinations could have a persuasive effect on other adjudicatory bodies such as courts. That is, if a non-binding rate determination is made by a respected body with relevant expertise that has collected

and considered a substantial body of relevant evidence in making its determination, its results will be informative to a court later considering the matter and may even be persuasive. To the extent that the rate determination, the tribunal's reasoning and the evidence supporting it are deemed to be admissible in a later judicial proceeding, the tribunal's proceeding will save the court time and resources, possibly expediting such a proceeding. Moreover, the parties to such a non-binding determination may themselves elect to abide by it rather than continuing their dispute through litigation, thereby reducing costs for all. However, there is a lack of data on the number of litigation proceedings avoided through non-binding determinations.

This being said, parties determined to maximize their advantage may not be eager to participate in a proceeding that will result in a non-binding rate determination (i.e., if they intend to proceed to litigation in any event).

FRAND rate determinations may be made binding either through SDO rules or governmental edicts (legislation or regulation). As shown in Table 2 (EXS), most governmental rate determinations are binding on the parties, though most of these allow for appeal of particular rate-setting decisions either within the relevant agency or to a specified court or courts.

4. Global v. National Rate Determinations

A FRAND rate-setting tribunal would need, at the outset, to decide whether it intends to determine FRAND rates on a national or global basis. It is typical that multinational parties negotiating FRAND licensing agreements do so on a global basis, though entities with a strong national focus may only seek licenses for their local markets. As a result, patent pools typically assess rates on a global basis, and the proposals discussed above regarding collective FRAND rate negotiation would also most likely involve rates determined on a global basis.

Following this logic, many arbitration tribunals will determine global FRAND rates to resolve global disputes (one of the major advantages of arbitration in multinational FRAND disputes). However, courts making FRAND rate determinations differ in the geographic scope of their decisions. While courts in the UK and China have demonstrated a willingness to set FRAND rates for SEPs around the world (and have been criticized for this), courts in the US have typically construed their authority as limited to setting rates for the US patents before them.

The choice whether a rate-setting body should determine national or global rates will impact litigation of the affect SEPs around the world and may also impact the ability of national courts in other jurisdictions to adjudicate the disputes before them (as disputes over FRAND rates will become moot once a global license is executed by the parties). Clearly, permitting a single adjudicatory body to determine global rates can make the overall FRAND rate determination process more efficient (as only one, rather than multiple, determinations will need to be made), though this efficiency may come at the expense of national sovereignty over patents issued in a particular jurisdiction. The proposed EUIPO Competence Centre, which will be authorized to set global FRAND rates, has been criticized for the expansive reach of its rate-setting authority.

5. Potentially Probative Evidence

The types of evidence that could be probative in FRAND rate-setting proceedings, and which a rate-setting body may wish to collect, include the following:

a. Value of contributions

FRAND determinations must take into account the value of a patented technology to a given standard and the importance of that standard to a given product. This evidence can be provided both by technical experts, who can evaluate the breadth and importance of individual SEP claims, as well as marketing experts who can speak to the

importance of particular technical features to an overall product and market.

In addition to the value of a particular patented technology, evidence relating to the value of other patented and unpatented features of a particular standard and product are useful to assess the relative value of the patented technology, as may be the contributions of the product user to the overall value of the product.

b. Comparable licenses

Many forms of rate-setting rely on “comparable” agreements or licenses in order to establish benchmark rates, and disputes over what licenses are sufficiently “comparable” to be utilized are commonplace. Thus, the UK Copyright Tribunal has considered whether an agreement can be considered comparable for rate-setting purposes if it was entered “in the shadow” of a pending reference to the Tribunal, the US Copyright rate court may view agreements as less than comparable if they were obtained through the exercise of market power, though the US Copyright Rate Board may accept such agreements.

The suitability of comparable licenses has also been heavily debated in FRAND rate cases. As in other areas of law, the principal points of contention are the threshold for comparability and the degree to which certain features of a license should disqualify it from consideration (e.g., whether it was entered into in settlement of litigation).

Given these considerations, a FRAND rate-setting body would do well to delineate as clearly as possible what types of licensing agreements would be viewed as comparable for evidentiary purposes. However, it seems inevitable that the body will need to analyze proffered agreements on a case-by-case basis in order to assess their probative value in any FRAND rate determination, as courts in the UK and US have done in numerous FRAND rate cases.

c. Development costs

NHS rate-setting in the area of prescription drugs takes into consideration a drug developer's cost and profit margin, as well as the amount of support that it may have received from government sources. While proposals to link SEP pricing to cost are thus far limited to academia, such information may help to establish the technical value of a patented technology.

d. Implementer costs and profit margin

In addition to SEP holder costs, the economics of the market for products implementing a particular standard may be relevant, particularly the profit margin typically enjoyed by implementers in that market. The level of implementer profits may also be useful as a check on potential royalty stacking. Of course, implementer profits will not be uniform across the entire market of standardized products, and while this measure of damages may be appropriate in a bilateral dispute between parties, it may be less probative when implementers of a standard are of varying sizes, operate in different markets, and offer products with different feature sets at different price points.

e. SDO policy interpretation

While a few SDO policies offer guidance regarding the interpretation of their FRAND commitments, most do not, and even those that do omit most details regarding the calculation of FRAND royalty rates. As a result, adjudicators interpreting the requirements of an SDO's FRAND policy must sometimes rely on the testimony of individuals who either helped to draft those policies or operated under them for an appreciable period of time and can thus represent the general understanding of the policy among SDO participants. Thus, when extrinsic evidence regarding accepted interpretations of otherwise ambiguous or incomplete SDO policy language is necessary, a rate-setting body should be authorized to seek such evidence through testimony of reliable witnesses.

f. Legal standards

If the legal rules governing a particular SDO policy are not within the professional competency of tribunal members (e.g., UK members of the tribunal may not be versed in French law, which governs ETSI's policies), then reliable testimony regarding the relevant laws should be obtained through unbiased expert testimony.

6. Rate Calculation Methodologies

There are numerous controversies surrounding the methodology for making FRAND rate determinations including: whether it is appropriate to assess a SEP's value by constructing a hypothetical negotiation among the parties, whether the value of a SEP should be assessed before (*ex ante*) or after (*ex post*) it is included in a standard, whether the royalty base should reflect the entire market value rule (EMVR) or the smallest salable patent practicing unit (SSPPU) and whether rate determinations should be made on a bottom-up or top-down basis, among others.

While the procedures of the rate-setting bodies discussed in this Report do not necessarily answer these questions, they do illustrate different approaches to the specificity with which the authorizing statutes and rules of rate-setting bodies constrain the deliberations of those bodies. Clearly, some level of guidance is required for a rate-setting tribunal to operate in a manner that is consistent and insulated from repeated challenge and second guessing. Yet it is also not clear that micro-specification of rate-setting procedures is either advisable or practical prior to the tribunal's formation.

7. Allocations among SEP Holders

Separately from the question of how to determine FRAND rates is the equally important question what information a rate-setting body should produce. This question is particularly salient in connection with aggregate rate determinations, in which two elements exist side by side: the overall royalty burden on a particular standard (i.e., the sum of all SEP royalties on a product conforming to that standard), and the

manner in which royalties are allocated among individual SEPs and SEP holders. There are competing methodologies for making such allocations with tradeoffs of accuracy against expediency. Whatever method is used, however, it appears important for an aggregate FRAND rate determination to make some effort toward allocation, as failing to do this renders the aggregate rate meaningless in the face of individual SEP holder demands. Every judicial FRAND rate determination that has utilized a top-down methodology (i.e., an aggregate rate), has by necessity performed an allocation, at least as to the SEPs asserted in the action.

8. Effect on Injunctive Relief

A prohibition on parties' ability to seek injunctive relief against implementers of standards during the pendency of rate-setting proceedings could be viewed as instantiating a SEP holder's promise to grant FRAND licenses to willing licensees by permitting the rate-setting body to conduct its determination in due course and preventing SEP holders from using the legal process (i.e., seeking an injunction) to pressure potential licensees to settle on unfavorable terms before the rate-setting body has made its determination.

Various precedents for such prohibitions exist, both historically and in current practice. Likewise, both the European Commission and the US Federal Trade Commission have issued orders prohibiting SEP holders from seeking injunctive relief during negotiation of FRAND rates with willing licensees. The EUIPO SEP Centre proposal would also prohibit SEP holders from proceeding in court during the pendency of the Centre's deliberations – one of the proposal's more controversial features.

It is important to note that in each of these cases, is not permanent. Once FRAND royalty rates are determined for a specific standard, a SEP holder should generally be permitted to enforce its SEPs and seek

injunctive relief against implementers that fail to pay the adjudicated FRAND rate within a reasonable period of time.

C. Procedural Design of a FRAND Rate-Setting Tribunal

There are numerous procedural dimensions of any rate-setting body, considerations regarding some of which are outlined below.

1. Composition, Expertise and Size of Tribunal

Rate-setting tribunals range in size from a single judge to panels of three or more adjudicators to large groups of stakeholder representatives. Table 3 (EXS) below summarizes the characteristics of the tribunals described in this Report.

Table 3 (EXS)

Rate-Setting Tribunal Characteristics

Part	Rate-Setting Body	Tribunal Size	Tribunal Qualifications
A.1 - Private (collective)			
III.A	Standards patent pool	Stakeholder representatives	None
IV.C	Group Negotiation (proposed)	Stakeholder representatives	None
A.2 - Private (adjudicated)			
IV.D	Global Rate-Setting Tribunal (proposed)	3 arbitrators	substantial expertise in technical standardization processes
III.C	FRAND Disputes (arbitrated)	1-3 arbitrators	Case specific

Part	Rate-Setting Body	Tribunal Size	Tribunal Qualifications
B.1 - Government (judicial)			
IV.B	US Standard Essential Royalty Court (proposed)	5 royalty judges	Ordinary judicial qualifications
III.B	FRAND Disputes (litigated)	1 (national judge)	Ordinary judicial qualifications
IV.E.2.c	JPO Hantei Procedure for essentiality checking	3 administrative judges	JPO judicial qualifications
II.D	US PRO rate court	1 (district judge)	Ordinary judicial qualifications
II.H	US interpleader proceeding	1 (district judge)	Ordinary judicial qualifications
B.2 - Government (agency)			
IV.E.2.b	EUIPO Competence Centre – essentiality checks	1 evaluator	TBD
IV.A.1	EUIPO Competence Centre – aggregate rates	3 conciliators	appropriate background from the relevant field of technology
IV.A.2	EUIPO Competence Centre – FRAND rate determination	1 conciliator	TBD
II.B	US State public utility commissions	Variable	Variable, may be elected

Part	Rate-Setting Body	Tribunal Size	Tribunal Qualifications
II.C	US Copyright Royalty Board	3 judges	Chief Judge – 5 years experience in adjudications, arbitrations, or trials Judges - significant knowledge in the field of copyright law and economics, with 7 years legal experience
II.E	UK Copyright Tribunal	Panels of 3: 1 Chair/Deputy, 2 ordinary members	Chairs – 5 years law practice or prior judicial experience Ordinary members – no requirement
II.F.1	US Federal Drug Pricing	Agency personnel	n/a
II.F.2	US State Prescription Drug Advisory Boards	Variable	Variable
II.G	UK National Health Service (NHS)	Agency personnel	n/a

The US Copyright Rate Board implementing statute offers the greatest level of detail regarding member qualifications, requiring that the Chief Judge have at least 5 years experience in adjudications, arbitrations, or

trials, and that the other two judges on a given panel possess significant knowledge in the field of copyright law and economics, respectively, and have at least 7 years of legal experience. The European Commission's SEP Centre proposal states only that conciliators should have an "appropriate background from the relevant field of technology" but leaves further qualifications to implementing legislation enacted within 18 months after adoption of the proposal.

In some cases, adjudicators may be political appointees or elected officials with little or no technical expertise, and it is left to the discretion of the appointing official to select individuals capable of discharging their duties. Some appointees to rate-setting bodies may be consumer advocates, labor representatives or representatives of interest groups such as patients suffering from a disease treatable by a drug under consideration by a drug pricing committee. While individuals such as these may lack experience in economic and technical matters, they may bring to the tribunal additional perspectives that may prove valuable in the rate-setting process.

National bias of tribunal members may be significant in the FRAND context, given different approaches to FRAND rates by the courts in different jurisdictions, as well as the perceived biases toward firms based in a rate-setter's "home" jurisdiction (and against firms based in trading rivals). To address this issue, approaches can be borrowed from a range of international tribunals. For example, the rules of the International Centre for Settlement of Investment Disputes (ICSID) provide that the majority of the arbitral panel in an investor state dispute must be nationals of states other than those involved in the conflict being arbitrated. At a more general level, all such ICSID arbitrators must be persons able "to exercise independent judgment." This requirement could implicate not only national origin, but also industry allegiance. It is well-known in the world of standardization that organizations operating at different levels or segments of a market (e.g., component manufacturers, end user product designers,

consumers, research institutions, patent assertion entities) have divergent policy preferences and goals. As a result, many SDOs require “balance” among different stakeholder groups on technical committees, and this effort at balance has been argued by some to be needed with respect to SDO policy decisions as well. Accordingly, it may be prudent for a FRAND rate-setting tribunal to seek members that are either entirely unaffiliated with any commercial interest (e.g., academics with no history of industry consulting) or to require balancing of individuals with ties to relevant stakeholder interest groups.

2. Confidentiality and Transparency

It will need to be decided whether, and to what degree, a potential FRAND rate-setting tribunal would make public its proceedings, evidence, deliberations, reasoning and decisions. The rate-setting bodies discussed in this Report vary considerably in this regard.

The submissions to, and results of, UK and US judicial proceedings (such as PRO rate court decisions and judicial FRAND rate determinations) are typically open to public inspection, subject to the issuance of protective orders for specific items of confidential and trade secret information. Likewise, advisory opinions issued in a JPO Hantei proceeding are “entirely open to the public”, subject to the protection of specific trade secret information. Judicial proceedings in countries such as Germany and China, however, are less transparent, and only the court’s published decisions are made public while the evidence collected and proceedings themselves are not open to the public.

The EUIPO Competency Centre, as proposed, will publish its expert opinions regarding aggregate FRAND rates. However, with respect to bilateral FRAND rate determinations, the methodology used by the conciliator will be made publicly available, but the actual rate determination will remain confidential.

Bilateral arbitration is usually conducted in an entirely confidential manner, such that none of the proceedings, reasoning or ultimate decision are made public. This level of confidentiality has been criticized, but also appears to be desirable to parties electing to resolve their disputes through arbitration.

3. Stakeholder Engagement

It will be important for the legitimacy of any FRAND rate-setting tribunal to permit participation by all interested stakeholders, whether SEP holders, implementers, regulators, or affected members of the public (represented by civil society organizations). This reflects notions of openness that already exist in the milieu of standardization, as well as other public rate-setting procedures.

Given the cost (in terms of time as well as financial outlays) of participating in rate-setting activities, the emergence of trade associations representing small and medium enterprises (SMEs) could facilitate engagement by these stakeholders in rate-setting proceedings. A rate-setting tribunal could affirmatively encourage participation by such groups.

4. Timing of Decisions

Rate-setting proceedings involving multiple parties and complex technologies and markets can be extremely time-consuming. These lengthy timeframes have led to efforts by emerging and proposed bodies to impose shorter timeframes for the determination of FRAND rates and related findings. Any FRAND rate-setting tribunal should set reasonable timelines for the determination of FRAND rates, given the amount of stakeholder input and evidence that will be collected.

5. Discovery and compelled production of evidence

Another important consideration is the degree to which evidence may be collected (or compelled) by the tribunal. In judicial proceedings and

some agency proceedings, the tribunal may order parties to produce evidence. Judicial proceedings in some countries, most notably the US and to a lesser degree the UK (but only under very limited circumstances in countries such as Germany and China), also permit parties to compel each other to produce evidence through the discovery process. A proposed tribunal's authority to permit discovery, and to require the production of evidence by third parties, should be considered.

6. Appeal

In most developed countries, the right to appeal a judicial determination of first instance is a fundamental component of the rule of law. In standardization, too, the ability of participants to appeal technical decisions of a working group or technical committee to a higher authority within an SDO is considered to be a requirement for "due process".

One of the principal questions that must be answered with respect to any appeals process is the level of deference that the appellate body should give to the determinations of the body whose decision is being appealed. At root, it is a question of statutory interpretation – to what degree should an agency be free to interpret its own statutory mandate, and to what degree should courts second guess that agency's decisions. This is one of the key issues in administrative law and continues to evolve around the world. In the UK, courts will set aside an agency determination only when it is "so unreasonable that no reasonable authority [after considering appropriate factors] could ever have come to it."

7. Cost

The cost of creating and maintaining a rate-setting tribunal, whether governmental or private, can be substantial. This cost involves compensation for staff (expert adjudicators, administrators and support personnel), physical facilities for offices and proceedings, information

technology, and external advisors. Some of the procedures associated with FRAND rate-setting, such as checking the essentiality of declared SEPs, could also involve substantial costs. In private bilateral arbitration, the direct costs of the proceeding, as well as an overhead charge to cover the indirect costs of the arbitral tribunal, are typically borne by the parties. Each party generally bears its own internal and external costs (e.g., attorneys, experts, etc.). The arbitration agreement may call for fee shifting, requiring the "losing" party to bear both the costs of arbitration as well as the prevailing party's costs.

The costs of private multilateral rate-setting are often spread among the participants. SDOs often charge membership fees that cover their administrative costs, while members bear their own costs of participation. Patent pools typically raise funding from participants to support their initial formation, including recruitment of participants, patent essentiality checks and licensing outreach. The Global Rate-Setting Tribunal proposal contemplates supporting the Tribunal via a small surcharge that SEP holders would impose on each SEP royalty payment.

Government agencies engaged in rate-setting may also seek to recoup their costs from parties to these proceedings. While these fees generally do not cover the entire cost of maintaining the institution, they may offset some operational costs and, in some cases, may be significant. This being said, many agencies involved in rate-setting are funded by the public purse and do not seek to recoup their costs from affected parties (e.g., in utility and prescription drug settings). The recoupment of costs is less common among judicial and quasi-judicial bodies, which may impose modest filing and court fees, but bear the bulk of their internal expenses. This approach can lead to periodic legislative review of the cost justification of such bodies.

D. Utilization

It is hard to predict the level of usage that would be made of a FRAND rate-setting body. The activity of rate-setting bodies in other sectors has varied dramatically. The comparatively low level of utilization of certain rate-setting tribunals is likely due to the fact that these bodies are called upon to set rates only when private parties cannot agree on rates. This is in contrast to tribunals that act as the rate-setter of first instance and must thus convene on a regular schedule in order to fulfill its statutory mandate.

Conclusion

Rate-setting in a range of industries has been conducted for more than a century through both governmental and private mechanisms. In many cases, these procedures have inured to the benefit of competitors, markets and consumers. While many SDOs require the holders of SEPs to grant licenses on FRAND terms, bilateral negotiation among SEP holders and implementers of standards has not always been smooth, leading to disputes and litigation around the world as well as jurisdictional competition and conflict.

Accordingly, the public interest may be served by the establishment of a structured rate-setting function for aggregate and individual FRAND licensing rates. Crafting the details of such a function, however, is a complex task with multiple interdependent variables and dependencies. As a result, reference to the successes, challenges and failures of rate-setting bodies across a diverse mix of industries and contexts can be helpful in enabling planners to optimize any such function for the benefit of the economy, innovation and consumers. To do so, policy makers should seek the input of all relevant stakeholders in the industry to be regulated, enact procedures to protect the interests of small entities and new market entrants, and clearly articulate the goals of the rate-setting enterprise.

I. INTRODUCTION

Standards, SEPs and FRAND

Most of the myriad technical standards implemented in products today—from Wi-Fi to HTML to 5G —were developed by firms collaborating within voluntary industry associations known as standards-development organizations (SDOs).[i] As recognized by the UK Competition and Markets Authority,

> Standardisation agreements generally produce significant positive economic effects, for example by encouraging the development of new and improved products or markets and improved supply conditions. Standards thus generally increase competition and lower output and sales costs, benefiting the economy as a whole. Standards may maintain and enhance quality, security, provide information, and ensure interoperability and compatibility (thus increasing value for consumers).[ii]

Given the technical complexity of many technical standards, they may be covered by hundreds, thousands, or even tens of thousands of patents.[iii] In order to manufacture and sell a product that implements such a standard without infringing these patents, the product manufacturer (often referred to as an "implementer" of the standard) requires permission -- a license -- from the holders of such patents. Yet, once a standard is widely adopted in the marketplace, product manufacturers have little choice but to offer products that comply with that standard. As a result, the holder of a patent that is "essential" to the implementation of that standard (a standards-essential patent or SEP) could have the power to prevent competing manufacturers from distributing products that implement the standard or to charge an

excessive price for them to do so (a phenomenon often referred to as "hold-up").[iv] In order to reduce the risk of hold-up, in the late 1950s[v] the predecessor of the American National Standards Institute (ANSI) adopted a policy requiring that ANSI-accredited SDOs could promulgate a standard covered by patents only if those patents were made available for licensing by all implementers of the standard on terms that were royalty-free[vi] or that bore royalties that are "fair, reasonable and non-discriminatory" (FRAND).[vii,viii] Such commitments trace their origins to a series of US antitrust remedial orders imposed on parties that used patents for anticompetitive ends during and in the decades following World War II, a period characterized by heightened antitrust enforcement in the US.[ix] Since then, antitrust and competition authorities around the world have recognized that commitments to license SEPs at rates that are no higher than FRAND can promote the economic and technical benefits of standardization.[x] The World Trade Organization (WTO) Technical Barriers to Trade (TBT) Agreement[xi] also recognizes the importance of such licensing commitments. Accordingly, most SDOs around the world today impose some form of SEP licensing commitment, and many of these commitments require licensing of SEPs at rates that are FRAND.[xii]

But despite the widespread imposition of FRAND commitments by SDOs, there is not broad consensus regarding the methodology for determining what royalty rates should be considered "fair" and "reasonable" in any given instance. No SDO defines precisely how to calculate royalty rates that are FRAND, and some expressly disclaim any role in establishing, interpreting, or adjudicating FRAND royalty rates.[xiii] A few SDOs, citing antitrust and competition law concerns, even prohibit the discussion of royalties and other SEP licensing terms within the context of SDO activities.[xiv]

With little guidance from SDOs, SEP holders and manufacturers of standardized products (implementers) are left to determine FRAND royalty rates in private negotiations. But given the complexity of these

transactions, the large sums at stake, and the legal uncertainty that pervades this area, disputes have arisen regarding the appropriate level of FRAND royalty rates. It is now routine for manufacturers of standardized products to claim that SEP holders seek royalties that are in excess of FRAND limits and are thereby violating their FRAND commitments by engaging in “hold-up” behavior. By the same token, it has become commonplace for SEP holders to claim that implementers are dragging their feet in negotiations, intentionally stalling so as to avoid paying royalties (a practice referred to as “holdout” or “reverse hold-up”).[xv] In both types of cases, courts around the world have been called upon to adjudicate the level of royalties that SEP holders bound by FRAND commitments can validly charge. Not surprisingly, these disputes are often costly, time consuming and unpredictable.

Background of this Report

In December 2021, the UK Intellectual Property Office (IPO) led a call for views to better understand whether the current framework for SEPs is functioning to support innovation and to establish whether change is needed. A further evidence-gathering exercise was carried out in March 2023, in the form of a questionnaire aimed at SMEs, small and mid-cap businesses.

As part of this evidence gathering, stakeholders identified a lack of price predictability in SEP licensing that could potentially act as a barrier to implementing standardised technology. Numerous solutions were proposed to address this issue. Among these, the IPO seeks additional evidence as to the following: (1) the creation of a SEP rate setting board to determine (on a non-binding basis) FRAND rates that can be used in SEP negotiations (i.e., on a bilateral basis between a SEP holder and an implementer), and (2) the determination of an aggregate FRAND royalty rate (i.e. total maximum price) for the SEPs covering a particular standard, before or shortly after its publication.

IPO commissioned this Report to collect and analyze evidence regarding the feasibility and potential effectiveness of these two proposed solutions in improving price predictability in SEP licensing, whilst maintaining innovation incentives and consumer welfare. In particular, IPO suggested that evidence be collected relating to other rate-setting procedures and tribunals such as Japan's "Hantei" advisory opinion, the UK Copyright Tribunal, Prescription Drug Boards (in the US), The European Commission's proposed Regulation on aggregate royalty and the pharmaceutical price regulatory scheme (PPRS).

Organization of this Report

In order to address IPO's inquiries regarding the establishment of a function or body that could determine bilateral or aggregate FRAND rates, this Report first summarizes, in Part II, rate-setting procedures in other fields that can offer instructive models for a potential FRAND rate-setting body. These include rate-setting for interstate transport (Section II.B), public utilities (Section II.C), copyrighted works in the US and UK (Sections II.D through II.F), pharmaceutical products in the US and UK (Sections II.G and II.H) and the statutory interpleader cause of action in the US (Section II.I).

The Report next turns in Part III to current methods of rate-setting for SEPs, including the private setting of aggregate royalty rates by patent pools (Section III.A), and adjudicated SEP rate setting in bilateral contexts by courts (Section III.B) and non-judicial alternative dispute resolution (arbitration and mediation) (Section III.C).

Part IV then summarizes recent proposals that have been made to establish FRAND rates for SEPs by other methods, including the European Commission's proposed EUIPO SEP Competence Centre (Section IV.A), the proposed US Standard Essential Royalty Act (SERA) (Section IV.B), a series of SDO and academic proposals concerning group negotiation of aggregate SEP royalty rates and caps (Section IV.C) and a proposal for an international, non-governmental

tribunal for setting aggregate SEP FRAND rates and allocations (Section IV.D). Section IV.E then summarizes related proposals made over the years that may affect rate setting, such as ex ante rate disclosure (Section IV.E.1), systems for "checking" the essentiality of declared SEPs (Section IV.E.2) and systems for checking the validity of declared SEPs (Section IV.E.3).

Finally, Part V applies the evidence presented in Parts II, III and IV to the specific features of a FRAND rate-setting system that are the subject of IPO's inquiry, including its legal and institutional setting, including competition law, constitutional law and treaty considerations (Section V.A), the decisional scope of such a body, including whether its determinations should be binding or non-binding, global or national, confidential or public (Sections V.B.1 to V.B.3), and the methodology that such a body should use in determining bilateral and aggregate FRAND rates (Sections V.B.5 and V.B.6). Section V.C addresses procedural design aspects and choices of such a rate-setting body, while Section V.D presents evidence regarding the potential utilization rate of such a rate-setting function.

II. RATE-SETTING PROCEEDINGS OUTSIDE OF STANDARDIZATION

This Section describes selected governmental rate-setting procedures outside the area of technical standardization. In assessing the adaptation of rate-setting procedures to FRAND rate determinations, both bilateral and aggregate, a number of insights can be gleaned from the procedures used in other rate-setting contexts, as courts and agencies have wrestled for years with many of the same challenges facing FRAND adjudicators today. The specific application of these rate-setting contexts to a potential FRAND rate-setting body is discussed in Part V.

. *Theory and History of Rate-Setting*

For centuries, governments have established expert bodies to determine rates for public and private goods and services across a broad range of industries and markets. Professor Richard Epstein traces the origin of such rate-setting bodies to Sir Thomas Hale's influential 1670 treatise *De Portibus Maris*, which discusses the need to regulate the prices charged by owners of wharves and other public accommodations "affected with a public interest."[xvi] Epstein goes on to recount the history of rate setting in England and the United States in industries including grain elevators, railroads, and public utilities.[xvii] Many of these early rate-setting tribunals sought to ensure that rates charged by regulated providers would be "reasonable and nondiscriminatory"[xviii] for resources that had broad public usage and were necessary to support public needs and the economy.

In his seminal 1982 analysis of governmental regulation, Stephen Breyer (later a Justice on the US Supreme Court) identifies several traditional justifications for rate-setting and other regulation, including the control of monopoly power, the limitation of excess rents, accounting for negative externalities (spillover effects affecting the public), compensating for informational deficits, and reducing "excessive" competition in certain markets.[xix] In response to these considerations, governments have engaged in various forms of rate-setting to determine and apply "just and reasonable" pricing, which can be based on a provider's cost of service, historical pricing, or other factors.[xx] Breyer identifies significant flaws in the implementation of each of these rate-setting regimes and posits several alternative approaches including an unregulated market policed by antitrust enforcement.[xxi] Yet despite his skepticism, not to mention his personal involvement in the deregulation of the US airline industry in the 1970s,[xxii] Breyer acknowledges that "where natural monopoly is at issue, regulation remains appropriate", citing in particular the telecommunications industry.[xxiii] At root, rate-setters of all kinds face a

similar set of challenges. Howard Shelanski, a former Director of the Bureau of Economics at the US Federal Trade Commission, describes the fundamental challenge of rate-setting as follows:

> suppose regulators want to protect buyers from a monopolist's exercise of its market power and allow the seller only a "fair" or competitive rate of return on its sales. Mistakes in setting the rates could either deliver consumers too little benefit compared to monopoly pricing (if the regulated rate is too high) or deter efficient levels of investment by the regulated firm (if the regulated rates are too low) ... The emergence of competition in regulated markets increases both the likelihood of rate-setting errors and their potential costs because the rate affects not just consumer surplus and incumbent [parties] decisions, but the incentives of the new entrants as well.[xxiv]

Shelanski's observations, originally formulated in connection with federally set rates for access to telecommunications equipment infrastructure, are equally applicable to FRAND rates for today's standardized technology.

Likewise, as Andrew Popper writes in connection with the regulation of motor carriage rates during the 1970s,

> The end results of an effective regulatory system and of an effective open market system are identical. There are four market objectives: fair rates or pricing that is consistent with cost plus a reasonable rate of return, efficiency, innovation, and logical control over market participants or entry. Whether a system is regulatory or open market, or a mixture of both, these objectives remain constant.[xxv]

These considerations, raised half a century ago, are echoed by the debates being conducted today over FRAND rate-setting. As such, the consideration of rate-setting mechanisms for SEPs can profitably take into account the lessons learned from other market sectors and past rate-setting efforts.

One of the touchstones of a rate-setting tribunal has always been that it should operate under a consistent set of principles and procedures, taking into account all relevant evidence pertinent to the case at hand.[xxvi] Its decisions should also be recorded and accessible to the public so as to offer as much guidance as possible to the industry being regulated. The rate-setting body should also continue in existence beyond the resolution of particular disputes, thus enabling its members to develop relevant expertise and custom that can be applied consistently from case to case.[xxvii] The expertise and industry knowledge resident within such a body can reduce the cost of each case decided, as the parties need not educate judges or juries regarding the practices and norms of the industry with each new case.[xxviii] Moreover, a rate setting tribunal can apply independent judgment and discretion when determining rates that must meet a loosely-defined standard, such as the “just and reasonable” rates that are established by public utility tribunals.[xxix]

Today, as will be shown in the examples below, rate-setting has expanded beyond public resources such as utilities and railroads. Yet many of the principles developed in these historical settings have continued to be applied in the case of more discretionary resources such as copyrighted content. This observation is then relevant in the consideration of rate-setting procedures for SEPs, which also, in large part, relate to discretionary goods such as smartphones and video games, though as the modern technology infrastructure migrates increasingly toward wireless and related technologies, the essentiality of these resources to everyday life has increased markedly.

Interstate Transportation in the US

Given its inherent interstate character, the transportation of goods and persons across state borders within the US has long been viewed as an area in need of consistency and fair and open access. In 1887, three years before the enactment of the Sherman Antitrust Act of 1890, Congress created the Interstate Commerce Commission (ICC), the first independent federal regulatory agency in the US. The initial charter of the ICC was to regulate the rates and practices of the increasingly powerful railroad industry, but the agency's authority was gradually expanded to cover all forms of interstate transport including trucking, domestic shipping, and pipelines, but excluding air transport.[xxx] The story of the ICC is a microcosm of American economic history. As encapsulated by Paul Dempsey,

> Congress initially instituted regulation under the ICC [in 1887] largely to protect the public from the monopolistic abuses of the railroads. Between 1920 and 1975, however, the goal of the national transportation policy shifted to protection of the transportation industry from the deleterious consequences of unconstrained competition. Then, just as market failure had given rise to economic regulation, regulatory failure gave rise to deregulation. Thus, in the last quarter of the twentieth century and into the twenty-first, regulatory policy has sought to stimulate competition in order to enhance consumer welfare. Managed competition across a number of infrastructure industries was jettisoned in favor of market Darwinism. Transportation, as the first major industry to be regulated and, nearly a century later, the first to be deregulated, has been at the forefront of this dramatic (r)evolution in economic policy. [xxxi]

Congress dismantled the ICC in 1995, transferring some of its authority to other agencies and leaving other segments of the transportation

sector unregulated, with varying results.[xxxii] During its century of operation, the ICC was party to thousands of rate-setting proceedings and hundreds of judicial cases involving rate tariffs, maximum rates and challenges to carrier rates. At its peak in 1976, the ICC had more than 2,100 personnel and a budget in excess of US$50 million.[xxxiii] A summary of the ICC's myriad procedures and rulings is beyond the scope of this Report, particularly since they are largely of historical interest and were eventually supplanted by the political decision to encourage greater competition (including price competition) among industry participants. Even so, a few aspects of the agency's rate-setting procedures are worth considering.

First, the ICC's authorizing statutes imposed various ratemaking standards on the agency, including that its rates must be "just and reasonable" and free from "unjust discrimination". These standards applied across all modes of transportation regulated by the ICC and required that the agency give due consideration to "the effect of the rates on the movement of traffic by the carriers for which the rates are prescribed" and "the need for adequate and efficient transportation service at the lowest cost consistent with the furnishing of such service and to the need of the carriers for sufficient revenues."[xxxiv]

A second notable feature of ICC rate-setting was its explicit (and early) engagement with collective groups representing market stakeholders. For example, in one 1977 interstate carrier tariff proceeding, Andrew Popper identifies over one thousand independent carriers that participated.[xxxv] Popper notes that the ICC's collective rate-setting authority was viewed as beneficial to smaller carriers inasmuch as it prevented larger ones from reducing prices solely to eliminate competition and reduce market entry.[xxxvi]

Another notable feature of the ICC was its authority to charge regulated entities for the exercise of its statutory functions. Under the Independent Offices Appropriation Act of 1952 (IOAA),[xxxvii] US federal agencies were authorized to prescribe and collect fees for their

services. Accordingly, the ICC levied fees on regulated entities to cover its direct labor and overhead costs for activities including reviewing rate agreements, processing requests for rate increases and publishing rate tariffs.[xxxviii] These fees were challenged by associations of regulated motor carriers on the basis, among other things, that "part or all of the identifiable benefits of the filings inure to the public at large rather than to the carriers." The challenge was unsuccessful, thus enabling the ICC (and other agencies) to continue to charge regulated entities for the agencies' internal costs incurred while engaged in rate-setting activity.

Finally, rate-setting in interstate transportation enjoyed one of the first statutory antitrust immunity frameworks in the US. Pursuant to the Reed-Bulwinkle Act of 1948 (codified as part of the ICC Act), Congress exempted from antitrust scrutiny those negotiated rate agreements among surface carriers that were submitted to, and approved by, the ICC as furthering national transportation policy.[xxxix] While some criticized this immunity as facilitating collusive price fixing,[xl] Andrew Popper has argued that "it allows for a process of deliberation and dialogue that is the *sine qua non* for survival of small and moderate-sized carriers and is in the best interest of the shipping public."[xli]

US Public Utilities[xlii]

Public utilities such as gas, electricity and water have long been viewed as essential resources for residents of even moderately populated regions of the United States. Given the significant cost of building infrastructure to distribute these resources to individual residences, the providers of such utilities are often granted service monopolies within municipalities, counties and states. As a result, the rates charged by these entities are regulated by the state and federal government. This Section summarizes some of the many public utility rate-setting procedures that currently exist in the US at the federal and state levels.

Public Utility Rate-Setting by the US Federal Government

At the federal level, the Federal Energy Regulatory Commission (FERC) has statutory authority under the Federal Power Act and the Natural Gas Act of 1938 to regulate the interstate transmission of electricity, natural gas, and oil, including by setting rates.[xliii] For example, FERC authority to set rates under the Natural Gas Act applies to "the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use, and to natural gas companies engaged in such transportation or sale, but shall not apply to any other transportation or sale of natural gas or to the local distribution of natural gas or to the facilities used for such distribution or to the production or gathering of natural gas."[xliv]

A leading treatise describes the rate-setting procedure utilized by FERC under the Natural Gas Act:

> Historically, FERC regulated prices under the Natural Gas Act by a system of filed rates ... Although these rates will typically first be proposed by the seller of the gas or the transmission services, the Commission must review the rates to ensure that they are "just and reasonable"; otherwise, they will be deemed "unlawful." After a proposed rate is submitted, the Commission may suspend it for a period of up to five months, either acting on its own motion or pursuant to a complaint from a state, municipality, state utilities commission or another gas company. If, after five months, FERC has taken no final action, the proposed rate will automatically go into effect, although the Commission may order the company to post a bond to cover any refunds the Commission may order when a fair rate is finally established. If the Commission determines that a proposed rate is unjust, unreasonable, discriminatory or preferential, it has the power to order a

> different, “just and reasonable” rate. The Commission’s rate determinations are reviewable in the courts of appeals; however, if FERC’s findings of facts are supported by substantial evidence, they must be taken as conclusive.[xlv]

Rate-Setting by State Public Utility Commissions

State governments have authority to regulate those portions of the public utility market that are not regulated by the federal government, including the delivery of utility services to in-state retail customers. In most states, public utility commissions derive their authority to set rates from state legislatures (although some have independent state constitutional authority).[xlvi]

Nearly all state laws governing the regulation of public utility rates establish that rates must be just, reasonable, and nondiscriminatory.[xlvii] Federal and state courts have the authority to review rates set by state utility commissions, but courts are generally deferential to the commissions’ rate setting.[xlviii]

Though procedures vary from state to state, the utility rate setting system in California, the most populous US state, is illustrative. In California, the California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies.[xlix] The CPUC was established in 1911 by constitutional amendment as the Railroad Commission.[l] In 1912, the California legislature expanded the Commission’s regulatory authority with the Public Utilities Act.[li] The CPUC consists of five Commissioners appointed by the Governor and confirmed by the state senate for six-year staggered terms.[lii]

The rate-setting process differs slightly across divisions, but generally involves a proposal by the utility and review by the CPUC. In the water division, for example, large utilities can apply to the CPUC for a rate increase with every three years.[liii] Their application must include

information to justify the proposed increase, such as historical and projected expenses and infrastructure improvement projects. The utility must also provide notice of the application to its customers and in the local newspaper. For 30 days after the filing of an application for a rate increase, protests can be lodged by members of the public. The Public Advocates' Office, an independent branch of the CPUC that represents ratepayers, also reviews the applications and may file protests.

The CPUC will often hold Public Participation Hearings to allow the public to voice opinions about proposed rate changes. In addition, any member of the public can become a party to an application, which allows them to file testimony, write briefs, and present evidence. The application proceeding is overseen by an administrative law judge (ALJ), who makes a proposed decision to authorize, deny, or partly authorize the proposed rate increase. The proposed decision then comes before the CPUC Commissioners who may accept, reject, or revise the ALJ's proposed decision. Any party aggrieved by a CPUC decision may petition the California appellate courts for a writ of review to have the lawfulness of the decision determined.[liv]

UK Copyright Tribunal

In the UK, a number of non-profit collective management organisations (CMOs) have been formed to grant collective licenses of copyrighted works such as musical compositions, sound recordings, print and digital works, artistic works, and the like to users.[lv] The UK Copyright Tribunal was established under the Copyright, Designs and Patents Act of 1988 (CDPA) as the successor to the Performing Rights Tribunal, which was established by the Copyright Act of 1956. Its function is to adjudicate commercial licensing disputes between copyright owners (typically represented by collecting societies) and copyright users. Any person in the UK who has unreasonably been denied a licence by a collecting society, or who considers the terms of an offered licence (particularly its rates) to be unreasonable, may refer the matter to the

Tribunal. Accordingly, the large majority of cases before the Tribunal involve disputes with collecting societies.[lvi]

Members of Tribunal

The Tribunal consists of a chairman and two deputy chairmen appointed by the Lord Chancellor, and between two and eight ordinary members appointed by the Secretary of the Department for Science, Innovation and Technology.[lvii] The only qualifications for membership are that the chair or a deputy chair must have been an advocate or solicitor for five years or have held judicial office.[lviii] There are no special qualifications for ordinary members.[lix]

The Chairman is unpaid, while other members of the Copyright Tribunal may be paid such remuneration and allowances as determined by the Secretary of State with the approval of the Treasury.[lx]

Cases are heard by panels of three Tribunal members: a chair or deputy chair, plus two ordinary members.[lxi]

Rate Setting Standards

In considering the terms of licensing schemes, the Tribunal makes decisions based on what it "determine[s] to be reasonable in the circumstances."[lxii] In determining what is reasonable, the Tribunal must consider the availability and terms of other licensing schemes in similar circumstances.[lxiii] The Tribunal must also ensure there is no unreasonable discrimination between licensees under the scheme or license.[lxiv]

This rate-setting standard has been interpreted by the Tribunal as the royalty rate that would have been freely negotiated between a willing licensor and willing licensee at arm's length.[lxv]

Evidence Considered

The Copyright Tribunal invites parties to submit evidence in its proceedings, which evidence can become, as one Tribunal member complained, "extensive, and extremely detailed. No point, however irrelevant, is allowed to go unanswered…"[lxvi] The Tribunal may also summon individuals to give evidence and produce documents relevant to a proceeding.[lxvii]

As in US copyright rate-setting cases, the Tribunal often refers to particular agreements in order to benchmark royalty rates. In a 2016 case regarding the licensing fees set by the UK Performing Right Society (PRS) and Mechanical-Copyright Protection Society (MCPS), two music-related collecting societies, the Tribunal applied the willing buyer/willing seller test and considered their recent licensing history as a benchmark.[lxviii] One benchmark proposed by the broadcast network ITV was a 2013 license agreement between the parties.[lxix] The collective licensing organizations argued that the 2013 agreement could not be a benchmark because it was a compromise figure reached in the shadow of a pending reference to the Tribunal.[lxx] The Tribunal determined that the base royalty would be the amount paid by ITV under the 2009 agreement with adjustments for percentage change in viewing figures and for inflation.[lxxi]

The evidence produced by the parties at a hearing, as well as the hearing transcript, is open to public scrutiny, except to the extent that particular items of evidence are agreed by the tribunal to be confidential information of a party.[lxxii]

Procedural Rules and Appeal

The predecessor to the Copyright Tribunal, the Performing Rights Tribunal, was criticized by numerous stakeholder groups for its slow and expensive proceedings, described by one litigant as "extremely costly, intolerably lengthy and highly complex".[lxxiii] These critiques, to some degree, carried over to the Copyright Tribunal after it was formed

in 1988. Therefore, in its 2007 review of the Copyright Tribunal, the UK IPO recommended a series of rule reforms to streamline the Copyright Tribunal's procedures.[lxxiv] The current procedural rules of the Tribunal were established in 2010.[lxxv] Filing fees for the Tribunal are minimal (£50 and below).[lxxvi]

A decision by the Copyright Tribunal may be appealed to the High Court, or if the proceeding is in Scotland, to the Court of Session.[lxxvii]

Utilization

From its inception in 1988 through 2008, the 95 complaints filed with the Copyright Tribunal were concluded: 28 resolved after hearing, 9 dismissed or struck out, 14 settled before hearing and 44 withdrawn (there is a lack of documentation on reasons for withdrawal).[lxxviii] The Tribunal publishes a partial list of its more recent determinations on its website.[lxxix] Between September 2021 (the latest update) and November 2014, the Tribunal adjudicated ten different matters. This low utilization rate may be attributable to the fact that, like the US PRO rate court, the Copyright Tribunal adjudicates rates only when private negotiations between copyright owners and collective management organizations fail. As described by litigants in one case, reference to the Tribunal is "regarded as a last resort: a failure of the most serious kind."[lxxx] This is in contrast to the US Copyright Rate Board, which, under its statutory mandate, must determine rates for a wide range of copyright compulsory licenses as the rate setter of first instance.

US Copyright Royalty Board

Compulsory Copyright Licensing in the US

The US Copyright Act has long provided for the compulsory licensing of certain categories of copyrighted works.[lxxxi] The Copyright Act of 1909 introduced compulsory licensing of the so-called "mechanical right" – the right to make a recording of a copyrighted musical composition after its initial publication at a statutory rate, initially set at

$0.02 per copy.[lxxxii] The original purpose of this provision, according to commentators, was to encourage emerging recording technologies such as player piano rolls and phonorecords, though today the mechanical right extends to a range of physical and electronic copies including CDs, DVDs, and downloaded ringtones.[lxxxiii]

When the Copyright Act was overhauled in 1976, Congress created three new compulsory licensing schemes:[lxxxiv] the cable rebroadcast license, which authorizes any cable or satellite television system to retransmit to its subscribers any television or radio broadcast signal that the FCC allows it to retransmit;[lxxxv] the jukebox license, which authorizes jukebox operators to make public performances of copyrighted musical compositions;[lxxxvi] and the public broadcasting license, which allows non-commercial educational radio and television broadcast stations to make public performances of copyrighted musical works, and to display copyrighted pictorial, graphic and sculptural works.[lxxxvii]

In 1995, Congress enacted the Digital Performance Right in Sound Recordings Act (DPRA), which, for the first time, recognized copyright in musical performances.[lxxxviii] In addition, the DPRA created a new compulsory license for sound recordings that are distributed via digital audio transmission.[lxxxix] This compulsory license was amended by the 1998 Digital Millennium Copyright Act[xc] and is now codified in Section 114 of the Copyright Act. The Section 114 compulsory license, as it currently stands, applies only to noninteractive digital music broadcasts (e.g., internet and satellite radio), but not to interactive digital transmissions or streaming that the user controls (e.g., Spotify). With respect to the compulsory licensing of noninteractive digital broadcasts of sound recordings,[xci] the statute in 2002 was amended to recognize an entity known as SoundExchange as the party authorized to collect and distribute royalties.[xcii]

The Evolution of Copyright Rate-Setting Authority

As part of the 1976 Copyright Act, Congress revoked the fixed $0.02 royalty rate for mechanical licenses that had been in effect for nearly three-quarters of a century and instead created an independent regulatory agency, the Copyright Royalty Tribunal, to assess royalty rates periodically for both the compulsory mechanical license and the three new compulsory licensing regimes created under the 1976 Act.[xciii] This Tribunal consisted of five Commissioners appointed by the President with advice and consent of the Senate.

By the early 1990s, however, Congress determined that the workload of the Tribunal was not sufficient to justify the retention of its full-time Commissioners.[xciv] Accordingly, in 1993 Congress enacted the Copyright Royalty Tribunal Reform Act, which replaced the permanent Copyright Royalty Tribunal with a series of *ad hoc* Copyright Arbitration Royalty Panels (CARPs), which would be convened by the Librarian of Congress on an as-needed basis to determine royalty rates and distribution of royalty fees under the Copyright Act's compulsory licensing provisions.[xcv]

By the early 2000s, however, there was significant dissatisfaction with the CARP system. As noted during Congressional hearings in 2002, CARP decisions were perceived as being unpredictable and inconsistent, Arbitrators lack appropriate expertise to render decisions and frequently reflect either a ‘‘content’’ or ‘‘user’’ bias, and the process was unnecessarily expensive.[xcvi] As a result, in 2004, Congress phased out the CARP system and replaced it with a permanent Copyright Royalty Board (CRB) consisting of three full-time Copyright Royalty Judges.[xcvii]

Procedures of the Copyright Royalty Board

Copyright Royalty Judges

The three full-time Copyright Royalty Judges are appointed by the Librarian of Congress, after consultation with the Register of Copyrights.[xcviii] Copyright Royalty Judges are administrative law judges whose authority derives from the Copyright Act. As such, they are appointed under Article I of the US Constitution, pertaining to the Legislative Branch of government, and lack the life tenure and other features of federal judges appointed under Article III (Judicial Branch).

Each Copyright Royalty Judge must be an attorney with at least 7 years of legal experience.[xcix] In addition, the Chief Judge must have at least 5 years experience in adjudications, arbitrations, or trials,[c] and the other two must have significant knowledge in the field of copyright law and economics, respectively.[ci]

Copyright Royalty Judges are appointed for 6-year terms and may be reappointed to subsequent terms.[cii]

While there is no formal requirement that judges be selected taking into account their prior affiliations with particular stakeholder interests or other potential indicia of bias, US federal judges are bound by the Code of Conduct for United States Judges, which requires that judges avoid the appearance of impropriety and "not allow family, social, political, financial, or other relationships to influence judicial conduct or judgment."[ciii] Likewise, a judge must

> disqualify himself or herself in a proceeding in which the judge's impartiality might reasonably be questioned, including but not limited to instances in which: (a) the judge has a personal bias or prejudice concerning a party, or personal knowledge of disputed evidentiary facts concerning the proceeding; (b) the judge served as a lawyer in the matter in controversy, or a lawyer with

whom the judge previously practiced law served during such association as a lawyer concerning the matter, or the judge or lawyer has been a material witness; (c) the judge knows that the judge, individually or as a fiduciary, or the judge's spouse or minor child residing in the judge's household, has a financial interest in the subject matter in controversy or in a party to the proceeding, or any other interest that could be affected substantially by the outcome of the proceeding.[civ]

Procedures

CRB proceedings are not governed by the Federal Rules of Civil Procedure or the Federal Rules of Evidence, but rather by the procedural and evidentiary rules contained in §803 of the Copyright Act as well as various regulations, orders and professional practices.[cv] Some of the differences between these procedural rules are significant. For example, while generally inadmissible under the Federal Rules of Evidence[cvi], hearsay is admissible in CRB proceedings to the extent deemed appropriate by the Copyright Royalty Judges.[cvii] Also, the Federal Rules of Civil Procedure limit the number of interrogatories to 25 per party, while CRB proceedings only allow 25 total per side.[cviii]

After a proceeding is announced, the CRB initiates a 3-month voluntary negotiation period in which the parties may attempt to settle their dispute.[cix] If a settlement is not reached by the end of this 3-month period, the parties must, without any discovery, file written direct statements consisting of a rate and term proposal, written testimony, and exhibits in support of the proposal.[cx] Thereafter, the parties have a 60-day discovery period generally limited to documents directly related to the other side's written direct case.[cxi] During the discovery period, each side may conduct a maximum of 10 depositions and 25 interrogatories.[cxii] Following the close of the discovery period, there is a

21-day settlement negotiation period.[cxiii] If there is no settlement, the judges hold a direct phase hearing with witnesses and cross-examination.[cxiv] After the hearing, the process starts over with rebuttal cases.[cxv] After the rebuttal phase concludes, the parties file proposed findings of fact and conclusions and present closing arguments.[cxvi] The judges then issue their determination of rates and terms in a written opinion.[cxvii]

Under Section 803(b)(6)(C)(ix) of the Copyright Act, the CRB may issue third-party subpoenas to obtain further evidence pertinent to rate setting. However, this provision has been interpreted as being "solely for the benefit of the Judges," leading one commentator to observe "that it is unlikely that the Judges will ever issue a subpoena."[cxviii]

Likewise, the CRB is charged with allocating a large royalty pool to the owners of copyrights in television broadcasts after they have been retransmitted by cable providers.[cxix] In some cases, hundreds or thousands of copyright holders can be implicated in these proceedings. All copyright holders who wish to claim a share of the previous year's aggregate pool of cable retransmission royalties must file a claim with the CRB.[cxx] If all claimants agree how the pool should be allocated, then the CRB simply authorizes the distribution of funds to the claimants in the amounts agreed.[cxxi] However, if the claimants cannot agree, then the CRB conducts a two-phase proceeding to determine the allocation of royalties.[cxxii] These proceedings are explained by the D.C. Circuit as follows:

> During Phase I, claimants may group themselves into categories based on the kind of programming that they own. Using evidence supplied by the claimants, the Board calculates the marketplace value of each category. It then assigns a percentage of the total royalty fee fund to each category based on its value relative to other categories. During Phase II, the Board subdivides the

fees allotted to each category among the individual claimants within that category.

Phase I and Phase II proceedings follow the same set of procedures. First, the Board publishes a notice of the proceeding in the Federal Register. Claimants then petition to participate in the proceeding. A three-month voluntary negotiation period ensues, during which the participating claimants attempt to reach an agreement without assistance from the Board.

At the end of the voluntary negotiation period, if any disputes remain, the Board plays a more active role in the process. The Board accepts written statements from the participating claimants, allows the participating claimants to conduct discovery, and orders a post-discovery settlement conference. If the participating claimants are still unable to resolve their differences, the Board then conducts a hearing and issues a final determination. Finally, the Librarian of Congress publishes the Board's determination in the Federal Register and distributes the royalty fees.[cxxiii]

Appeal

The determinations of the CRB are subject to optional review for legal error by the Register of Copyrights and may be appealed to the US Court of Appeals for the D.C. Circuit.[cxxiv] If the D.C. Circuit disagrees with a rate set by the CRB, the court may either set its own rate, based on the evidence, or remand the matter to the CRB for further proceedings.[cxxv] The court reviews the CRB's decisions under the Administrative Procedures Act (APA), which generally requires that agency determinations be upheld unless they are arbitrary, capricious, contrary to law, or not supported by substantial evidence.[cxxvi] The DC

Circuit's review of CRB rate determinations has historically been deferential due to their highly technical nature.[cxxvii]

There are only a handful of appeals of CRB decisions each year. For instance, there was one appeal in 2023,[cxxviii] no appeals in 2022 or 2021, two in 2020,[cxxix] one in 2019,[cxxx] and one in 2018.[cxxxi] Of these five appeals, the court affirmed the CRB's decisions in the 2023 and 2018 cases,[cxxxii] dismissed the 2019 case because the parties had settled,[cxxxiii] and vacated parts the CRB's decision in both 2020 cases.[cxxxiv]

Rate-Setting Standards and Methodology

The standards by which the CRB has set royalties for copyrighted content have evolved over the years. As noted above, the original mechanical compulsory license under the 1909 Copyright Act (now codified at Section 115 of the Copyright Act) was fixed at a statutory rate of $0.02 per copy. This fixed rate was, as Professor Jacob Noti-Victor observes, a "blunt instrument … unable even to account for inflation," and widely criticized.[cxxxv] When the Copyright Act was overhauled in 1976, the fixed mechanical rate gave way to more flexible rate setting by the Copyright Royalty Tribunal and later the Copyright Arbitration Royalty Panels and, most recently, the CRB. From 1976 to 2018, these successive bodies were directed by Congress under Section 801(b) of the Copyright Act to calculate royalty rates in a manner that would maximize the availability of creative works to the public; afford copyright owners a fair return for their creative work and the copyright user a fair income; reflect the relative roles of the copyright owner and the copyright user in the product made available to the public and to minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.[cxxxvi] As explained by Professor Noti-Victor, these factors were modeled on rate-setting considerations in the public utility market, in which it was important to ensure public access to critical public resources without undue regard to market forces.[cxxxvii]

In 2018, Congress again amended the royalty methodology to be used by the CRB for the Section 115 mechanical license. The statute now provides that the CRB

> shall establish rates and terms that most clearly represent the rates and terms that would have been negotiated in the marketplace between a willing buyer and a willing seller. In determining such rates and terms … the Copyright Royalty Judges shall base their decision on economic, competitive, and programming information presented by the parties, including— (i) whether use of the compulsory licensee's service may substitute for or may promote the sales of phonorecords or otherwise may interfere with or may enhance the musical work copyright owner's other streams of revenue from its musical works; and (ii) the relative roles of the copyright owner and the compulsory licensee in the copyrighted work and the service made available to the public with respect to the relative creative contribution, technological contribution, capital investment, cost, and risk.[cxxxviii]

This shift of the CRB's rate-setting authority for the Section 115 mechanical license from an access-oriented set of considerations under the original 1976 Copyright Act to a willing buyer-seller market-driven standard in 2018 reflects a general trend in CRB rate-setting for music compulsory licenses. And the compulsory license for noninteractive digital music broadcasts introduced in 1995, and now codified in Section 114, follows the same pattern. Thus, by 2018, all compulsory music license rates determined by the CRB are required under the statute to reflect the "terms that would have been negotiated in the marketplace between a willing buyer and a willing seller."[cxxxix]

In some cases, the CRB may "adopt rates and terms reached in an agreement among some or all of the participants in a proceeding as long as (i) [it] affords parties to the proceeding "an opportunity to

comment on the agreement and object to its adoption" (and those that would be bound by the terms an opportunity to comment on the agreement); and (ii) the agreement provides a 'reasonable basis for setting statutory terms or rates.'"[cxl] Thus, even if those rates could have included other factors (such as an inflation adjustment), they may be upheld if they reflect a reasonable 'market value' that 'a willing buyer and a willing seller would pay, with neither party being under any compulsion to bargain.'"[cxli]

The public broadcast compulsory license under Section 118 also involves rate setting by the CRB if industry stakeholders are unable to agree on rates amongst themselves. The statute provides little guidance in terms of the CRB's standards for rate setting, stating only that it "may consider the rates for comparable circumstances under voluntary license agreements negotiated" by copyright owners and public broadcasters[cxlii] – effectively deferring to comparable licensing agreement rates. As Professor Noti-Victor has observed, the CRB's "main function" in Section 118 rate setting proceedings "seems to be as facilitator and approver of industry-wide settlements."[cxliii]

Finally, the cable and satellite rebroadcast compulsory licenses established under Sections 111, 119 and 122 of the Copyright Act also give rise to CRB rate setting. Commentators have described this licensing scheme as ranging from "notoriously complex" to "incomprehensible"[cxliv], with a complex statutory rate formula based on a percentage of the cable or satellite provider's gross receipts.[cxlv] The result is subject to adjustment by the CRB, which, unlike the music industry PROs, the Harry Fox Agency or SoundExchange, itself handles royalty distribution to the cable and satellite broadcasters.[cxlvi]

In assessing these compulsory licensing rate formulations, commentators have viewed them as being useful to "finely calibrate the rewards to copyright owners and disseminators based on the value derived by consumers."[cxlvii] Or, as explained by Professor Peter DiCola, when Congress establishes a rate setting process,

> [u]ltimately it is engaged in an exercise of allocation. Congress is choosing the process for allocating the surplus from music distribution; that is, the value that consumers experience from listening to music over and above the costs of creating and distributing it. How much of the value of a radio broadcast of a recording comes from the radio station and how much comes from the owners of the sound recording and musical work copyrights?[cxlviii]

Evidence Considered

In making royalty determinations, the CRB evaluates substantial evidence and testimony from a range of fact and expert witnesses.[cxlix] Evidence is typically presented by the parties to the proceeding, who present what evidence is necessary to support their arguments. Discovery is permitted by the parties, and may also be ordered by the CRB, to obtain probative documents from other participants to the proceeding.[cl] Like the UK Copyright Tribunal, the CRB may also subpoena non-participant witnesses to present evidence in its proceedings.[cli] If confidential information is provided as evidence to the CRB, it has the authority to issue protective orders that exclude such confidential information from the public record.[clii]

Illustrating the scale and scope of these hearings, the CRB's 2015 proceedings on rates for noninteractive webcasting lasted four months and generated more than 12,000 pages of exhibits, with oral testimony from forty-seven witnesses (including fourteen economists).[cliii]

In 2020, the CRB set the noninteractive webcaster rate under 17 USC. §114 for the years 2021 through 2025.[cliv] The evidentiary hearing lasted roughly a month and the participating non-settling licensees at the hearing included the National Association of Broadcasters, National Religious Broadcasters Noncommercial Music License Committee, Google, iHeart Media, Pandora, and Sirius XM.[clv] The CRB heard oral

testimony from 33 witnesses (including 13 qualified experts), and admitted 748 exhibits into evidence, comprising more than 900,000 pages of documents.[clvi]

A key form of evidence informing a CRB rate setting proceeding is comparable negotiated licensing agreements, which are used as benchmarks against which rates are determined.[clvii] Unlike rate court proceedings (discussed in Section II.E, below), the CRB has traditionally taken comparable licensing agreements at face value, without accounting for the potential exercise of market power of one of the parties.[clviii] The CRB's reliance on comparable agreements has been criticized given the lack of commercial agreements covering the subject matter of compulsory license grants.[clix]

In the 2020 rate-setting proceeding for noninteractive subscription services, the CRB considered benchmark analyses by two economic experts.[clx] One of the experts used the interactive market as his benchmark for the noninteractive market, relying on direct licenses between eleven interactive services and the three Majors (Sony, Universal, and Warner).[clxi] The National Association of Broadcasters (NAB) also presented benchmark evidence to support their argument that commercial simulcasters should be subject to a separate (lower) rate than other non-subscription transmissions webcasters.[clxii] In support of their proposal, NAB offered 16 direct license agreements between webcaster iHeart and indie record labels that include rights for simulcasting and other webcasting, as well as agreements licensing public performance rights in musical works to webcasters.[clxiii]

In addition, because the parties' experts relied on various consumer behavior surveys to make their determinations, the CRB examined the surveys to determine whether they were reasonably reliable evidence of consumer valuation of different types of content.[clxiv] The CRB also considered several "label suppression experiments" (LSEs) conducted by a Pandora economist to determine the effect on users' listening habits if Pandora ceased playing the catalog of a particular record

company.[clxv] The CRB determined that LSEs were not a reliable source of evidence for use in economic analysis, and that expert calculations relying on LSE data was likewise flawed.[clxvi]

Under its implementing legislation, the CRB is also permitted to admit hearsay evidence that might otherwise be inadmissible in a judicial proceeding.[clxvii]

Stakeholder Participation and Representation

In some cases, hundreds or thousands of copyright holders can be implicated in CRB proceedings. Different stakeholders and stakeholder groups in CRB proceedings are often represented by trade associations. For example, in mechanical license rate proceedings under Section 115 of the Copyright Act, copyright owners may be represented by associations such as the National Music Publishers Association (NMPA) and the Songwriters Guild of America, while the distributors of recordings are represented in these proceedings by groups such as the Recording Industry Association of America (RIAA), which represents record labels, the Digital Media Association, which represents digital music service companies; CTIA, which represents the US wireless communications industry, as well as digital music distributors such as Apple and Amazon.[clxviii]

Utilization

Since its formation in 2004, the CRB has held proceedings every four years to set statutory royalty rates under §§ 111, 114, 115, 118, and 119,[clxix] and occasionally conducts cost of living adjustment hearings to adjust statutory rates.[clxx] In 2023, the CRB docketed 21 different matters: 3 rate-determination proceedings, 6 fund distribution proceedings, 3 cost of living adjustment proceedings and 9 notices of intent to audit.[clxxi] Nineteen CRB cases have been appealed to the Court of Appeals for the DC Circuit since the CRB's formation.

Though the CRB has heard an appreciable number of cases determining statutory royalty rates for compulsory licenses, most compulsory licenses under the Copyright Act also permit parties to negotiate private arrangements in lieu of the statutory compulsory license. This option is most notable in the case of the mechanical license under Section 115. As explained by attorney Paul Fakler,

> The various regulations and statutory requirements related to the Section 115 license have proven so burdensome that most copyright owners and licensees bypass the statute entirely through an entity called the Harry Fox Agency (HFA), which is a division of the National Music Publishers Association (NMPA). Most, though not all, publishers have agreed to issue mechanical licenses through HFA. The HFA license streamlines the reporting and payment obligations of licensees but uses the statutory Section 115 royalty rates as a default.[clxxii]

The US Rate Court for Performing Rights Organizations (PROs)

The performance of a copyrighted musical composition in the United States, whether live or via broadcast, requires a license from the copyright owner.[clxxiii] In the United States, three Performing Rights Organizations (PROs), the American Society of Composers, Authors, and Publishers (ASCAP), formed in 1914, the Society of European Stage Authors and Composers (SESAC), formed in 1930, and Broadcast Music, Inc. (BMI), formed in 1939, act on behalf of a large number of copyright owners to grant performance licenses on a collective basis to broadcasters, sports arenas, nightclubs, restaurants, and most other venues and services that publicly perform copyrighted compositions.

Shortly after BMI was formed in 1939, the Department of Justice brought an antitrust action against ASCAP and BMI, alleging that the two PROs fixed prices for aggregated public performance rights.[clxxiv] The lawsuit was resolved by entry of consent decrees which continue to bind ASCAP and BMI today.[clxxv] These consent decrees require that the PROs make performance licenses available on a nondiscriminatory basis to all users and that if the parties cannot agree on a reasonable royalty rate, the rate will be determined by the federal district court in the Southern District of New York.[clxxvi] Thus, unlike the CRB, which "must manufacture a licensing rate from scratch using a statutorily mandated procedure", the rate courts "must only determine whether a given [challenged] rate falls within a range of reasonableness".[clxxvii]

Rate Court Procedures

Unlike CRB proceedings, PRO rate litigation is conducted in federal court under the Federal Rules of Civil Procedure and the Federal Rules of Evidence, including discovery.

Upon written request for a public performance license, the PRO has 60 days to advise the music user of the fee that it deems reasonable.[clxxviii] If the parties are unable to reach an agreement within 60 days, the music user may apply to the US District Court of the Southern District of New York for a determination of a reasonable fee.[clxxix] The PRO bears the initial burden of proving that its proposed royalty rate is reasonable, and if they establish that its rate is reasonable, then the district court must adopt it.[clxxx] If the PRO does not establish that its fee is reasonable, then the court will determine a reasonable fee based on all the evidence.[clxxxi]

A case offering an example of the PRO rate litigation process is *THP Capstar v. ASCAP*.[clxxxii] In this case, DMX, a large provider of background music for offices and other facilities, and ASCAP could not agree on a license rate, so ASCAP requested the court to set a reasonable rate for the license.[clxxxiii] A bench trial was held in which

both sides presented expert and lay testimony as well as trial exhibits and proposed findings of fact and conclusions of law.[clxxxiv] The court concluded that ASCAP did not sustain its burden of proving that its rate proposals were reasonable, and instead adopted DMX's proposal as representing a reasonable fee.[clxxxv]

Either party may apply to the court to fix an interim rate pending final determination of a reasonable rate, which the court will set within 90 days of the application retroactive to the date of the written request for a license.[clxxxvi] The court will set the interim rate with limited discovery, under the presumption that the last existing license (if any) between the music user and the PRO, or between licensees similarly situated to the music user and the PRO, sets forth the appropriate interim rate.[clxxxvii]

When a reasonable rate has been determined by the Court, the PRO must offer a license at a comparable rate to all other similarly situated music users who thereafter request a license.[clxxxviii]

Rate-Setting Standards and Methodology

The standard applied by courts conducing ASCAP and BMI rate proceedings is one of reasonableness, deriving from the fair market value of the underlying musical compositions. As explained by the Court of Appeals for the Second Circuit:

> When setting an appropriate rate, the District Court must attempt to approximate the "fair market value" of a license - what a license applicant would pay in an arm's length transaction. In many cases, "the appropriate royalty rate" - i.e., the fair market value of the license - is determined by applying the appropriate percentage rate to the fair market value of the music. In so doing, the rate-setting court must take into account the fact that ASCAP, as a monopolist, exercises market-distorting power in negotiations for the use of its music.[clxxxix]

Despite this guidance, in at least one recent decision,[cxc] the rate court, applying this "fair market value" standard, set a rate that some commentators believe to be below the level that the licensee (Pandora) could have obtained on the open market. As described by Professor Noti-Victor,

> the court considered several features of the music licensing market that seem designed to "discern a rate that will give composers an economic incentive to keep enriching our lives with music, [but] that avoids compensating composers for contributions made by others either to the creative work or to the delivery of that work to the public." For example, the court considered whether Pandora was "promotional" or "cannibalistic" of traditional music sales, concluding that it was likely promotional and thus posed little risk of harm to copyright owners' conventional distribution markets. The court also rejected ASCAP's argument that Pandora's alleged success entitles copyright owners to a higher royalty fee, finding that Pandora's success is "attributable not just to the music it plays ... but also to its creation of the [Music Genome Project, a database and algorithms designed to predict users' musical interests,] and its considerable investment in the development and maintenance of that innovation." The court concluded that the value added by such innovation weighed in favor of higher compensation for Pandora, rather than for copyright owners. Ultimately, considering these factors, the court adopted a royalty rate that many believe is more favorable to Pandora than any rate it would have been able to receive in an open licensing market.[cxci]

A few years earlier, the Second Circuit found that ASCAP and BMI’s proposed licensing fees were not reasonable and did not reflect rates

that would be set in a competitive market in part because the PROs did not take into account DMX's direct licensing program.[cxcii] One scholar noted that the DMX example illustrates how circumvention of a collective in favor of direct licensing can lead to misrepresentation of market rates.[cxciii]

Additionally, in 2010 the Second Circuit found that the rate set by the district court did not represent fair market value because it adopted an imprecise metric (music streaming time rather than page views) without providing a sufficient rationale for that decision.[cxciv]

Evidence Considered

Like the CRB, district courts adjudicating PRO rate cases take into account comparable licensing agreements among the parties. Unlike the CRB, however, these courts are guided by the ASCAP and BMI consent decrees, which were put in place as a result of the alleged exercise of market power by the PROs.[cxcv] Thus, as the Second Circuit has observed, a license may not be sufficiently comparable if it was obtained through the exercise of market power.[cxcvi]

Utilization

Since the 2001 amendment to ASCAP's consent decree, there have only been 6 rate court proceedings in the Southern District of New York.[cxcvii] Though rate court proceedings are relatively rare, commentators view the "specter of judicial oversight" as encouraging private agreement on rates.[cxcviii]

Drug Price Regulation in the UK

In the UK, the National Health Service (NHS) provides residents with publicly funded health care services. Under the NHS, all medical appointments and hospital treatments are free to the patient, as are almost all prescription drugs.[cxcix]

The NHS reviews all new drugs that their manufacturers seek to introduce to the UK market in order to determine whether they pass a cost-utility threshold before recommending them for coverage by the NHS.[cc] The factors considered by the NHS in making such determinations are clinical and cost effectiveness.[cci] The NHS is supported in making such determinations by the National Institute for Clinical Effectiveness (NICE), which reviews all new drugs using measures of improved quality of life compared to existing therapies.[ccii] NICE is an executive non-departmental public body sponsored by the Department of Health and Social Care that is charged with the evaluation of new health technologies for NHS use.[cciii] NICE decisions are made by independent committees of NHS health professionals, academics, and industry and lay representatives who offer their time on a volunteer basis.[cciv] Committee chairs are appointed by NICE board members and directors, and committee members are appointed by the chair or vice chair of the committee and a senior member of staff from the programme team.[ccv] If NICE determines that a drug's effect on quality of life is not great enough to justify its price, then the drug is not recommended to the NHS.[ccvi]

The UK uses a profit control method to contain drug prices under a voluntary agreement (the Pharmaceutical Price Regulation Scheme or PPRS) between the Department of Health and the pharmaceutical industry.[ccvii] This voluntary agreement is renegotiated every five years between the Association of British Pharmaceutical Industries and the Department of Health, and covers the vast majority of branded pharmaceutical products (those still covered by patents).[ccviii] The PPRS allows pharmaceutical companies to set prices as long as their overall profit does not exceed the set cap, which is set with allowances for R&D expenditure.[ccix] In 2019, the PPRS was revised and renamed the Voluntary Scheme for Branded Medicines.[ccx] The agreement set the increase in costs to the NHS at 2%. That is, if between 2019 and 2023, the increase in drug spending by the NHS is above 2%, then the

pharmaceutical industry is required to pay back the overage to the NHS.[ccxi]

Companies that do not opt into the voluntary scheme are subject to the statutory scheme.[ccxii] Under either scheme, companies must agree to a list price set by the NHS for a branded medicine before they can market it in the UK.[ccxiii] Prices for generic drugs, on the other hand, are generally left to the market.[ccxiv]

Because the NHS controls almost 100% of healthcare spending in the UK, it is in an extremely powerful negotiating position and often obtains significantly reduced rates for drugs that are more costly in the US and elsewhere.[ccxv]

Drug Price Regulation in the US

Medicare

The US federal government has traditionally not regulated the prices of prescription drugs, leaving these to the market and negotiations between pharmaceutical companies and insurance carriers. Yet in response to public and political criticism of high drug prices in the US, in 2022 Congress enacted provisions in the Inflation Reduction Act (IRA)[ccxvi] that allow the federal Medicare program[ccxvii] to negotiate prescription drug prices for its covered participants.[ccxviii] Specifically, the IRA authorizes the Secretary of the Department of Health and Human Services (HHS) to negotiate prices directly with participating manufacturers for high expenditure, single source drugs that lack generic or biosimilar competition.[ccxix] Factors to be considered in the negotiation process include a drug's clinical benefit, the extent to which it fulfills an unmet need, its impact on covered individuals, costs associated with research and development, and costs associated with production and distribution.[ccxx] In October 2023, HHS announced the 10 drugs that were selected for the first cycle of negotiation under this

provision.[ccxxi] The agreed-upon negotiated prices are scheduled to be published by September 1, 2024, and those prices will become effective on January 1, 2026.[ccxxii]

The Centers for Medicare & Medicaid Services (CMS), which administers the Medicare system, has laid out the process for these negotiations. After HHS selects the drugs for negotiation, the drug companies and the public will have an opportunity to submit data and information to CMS.[ccxxiii] The CMS then invites each participating drug company to a meeting on its data submission.[ccxxiv] CMS will also hold a public patient-focused listening session for each selected drug.[ccxxv] After that, CMS will send an initial offer for each selected drug to the drug's vendor, and companies will have 30 days to respond by accepting or providing a counteroffer.[ccxxvi]

In developing its initial offer, CMS is required to consider the following factors:[ccxxvii]

- Manufacturer-submitted data related to the selected drug:
    - Research and development costs;
    - Unit costs of production and distribution;
    - Prior federal financial support;
    - Pending and approved patent applications, FDA exclusivities, and FDA applications and approvals; and
    - Market/revenue/sales data.
- Evidence about alternative treatments, as available:
    - The extent to which the selected drug represents a therapeutic advance compared to existing therapeutic alternatives, and the costs of such alternatives;

- Prescribing information approved by the FDA for the selected drug and its therapeutic alternatives;
- Comparative effectiveness of the selected drug, including impact for specific populations, such as individuals with disabilities, the elderly, the terminally ill, children, and other populations; and
- The extent to which the drug and its therapeutic alternatives address an unmet medical need.

If the manufacturer does not accept this initial offer, it may make a counteroffer to CMS within 30 days of the receipt of the initial offer.[ccxxviii] If CMS does not accept the counteroffer, it will invite the manufacturer to engage in up to three negotiation meetings during a period of approximately six months.[ccxxix]

Companies that manufacture a selected drug can choose either: (1) to participate in negotiations, (2) to opt out of negotiations and pay an excise tax on sales of the drug to Medicare; or (3) to opt out and avoid the excise tax on the selected drug by withdrawing from the Medicare and Medicaid programs.[ccxxx] If CMS and the drug company cannot come to an agreement on price by the specified deadline, and the manufacturer does not choose another option, the manufacturer will enter a period during which an excise tax may be assessed.[ccxxxi]

State PDABs

In recent years, some US states have created prescription drug affordability boards (PDABs) -- independent bodies empowered to analyze the cost of drugs and suggest effective ways to lower prescription drug prices for residents.[ccxxxii] PDABs may set spending targets for specific drugs and make recommendations to commercial health plans, state employee health plans, and Medicaid.[ccxxxiii] Some PDABs have more extensive authority, such as the ability to set upper payment limits on certain high-cost drugs after conducting an

affordability review.[ccxxxiv] For example, the Colorado and Washington PDABs may set an upper limit each year for up to 12 prescription drugs.[ccxxxv] The National Academy for State Health Policy defines a PDAB as an entity comparable to a public utility commission, with the ability to establish upper payment limits if a drug is otherwise unaffordable for state health care purchasers and consumers.[ccxxxvi]

Maryland was the first state to establish a PDAB, which it did in 2019.[ccxxxvii] The Maryland PDAB consists of five members who possess expertise in the fields of either health care economics or clinical medicine.[ccxxxviii] One member of the Board is appointed by each of the following: the Governor, the President of the Senate, the Speaker of the House, and the Maryland State Attorney General, with the chair of the board appointed jointly by the Senate President and the House Speaker.[ccxxxix] Maryland's PDAB initially limits the board's ability to set upper payment limits subject to legislative approval.[ccxl] In determining whether a drug is unaffordable, the Maryland board considers factors including: the wholesale acquisition cost, average rebates provided to health plans and pharmacies, net drug prices, and average patient copay.[ccxli]

Oregon's PDAB was established in 2021.[ccxlii] It consists of five members and three alternates, all appointed by the governor.[ccxliii] It appears that the board meets once per month, with their agenda, minutes, and public comments published online.[ccxliv] It does not have the power to set upper payment limits, but will select nine drugs per year for an affordability review.[ccxlv] They will make an annual report of the drugs reviewed and make recommendations to the legislature on changes necessary to make prescription drugs more affordable in Oregon.[ccxlvi]

PDABs in Colorado and Washington, as in Maryland, are authorized to set upper payment limits on certain high-cost drugs after conducting an affordability review.[ccxlvii] In other states, such as Maine and New Hampshire, PDABs do not have the authority to set payment limits but

may determine spending targets and make recommendations to commercial health plans, state employee health plans, and Medicaid.[ccxlviii]

In addition, some states have introduced statutory caps on certain prescription drugs, particularly insulin.[ccxlix] States that have these statutory caps generally limit their scope to insulin. However, a few states have statutes limiting the copayment or coinsurance applicable to a broader range of specialty drugs.[ccl] Delaware defines a specialty drug as a prescription drug for a person with a complex, chronic, or rare medical condition, where the total monthly cost of the prescription is $600 or more, and the drug is not stocked at most retail pharmacies and has one or more unique characteristics (i.e. special shipment requirements).[ccli]

US Statutory Interpleader[cclii]

For centuries the common law action in interpleader has provided a party with a mechanism to protect itself from multiple adverse claimants to a single asset. Upon the initiation of an interpleader proceeding, a court will adjudicate all competing claims against the asset in a single action, thereby avoiding the potential for different litigants to make competing claims against the same asset in different proceedings. Historically, such proceedings had their origins in competing custodial claims over orphaned children.[ccliii] Soon, however, they began to be employed in commercial disputes both in the United Kingdom and, eventually, the United States.

In the United States, the common law action in interpleader was codified in statute by 1917.[ccliv] At that time, interpleader was typically invoked to resolve competing claims upon the proceeds of insurance policies or bank accounts.[cclv] More recently, in the aftermath of the 2008-09 financial crisis, interpleader actions were filed by financial institutions holding securities in different tranches of the same

securitized financial instruments. These parties requested that courts determine whether certain defaults under those instruments had occurred (with the result having significant financial implications for the different tranches).[cclvi]

Historically, courts required that all adverse claims in an interpleader action be dependent or "derived from a common source."[cclvii] In the US, this privity requirement was eliminated in 1936, when the interpleader statute was amended to provide that an action in interpleader could be maintained even though "claimants do not have a common origin, or are not identical, but are adverse to and independent of one another."[cclviii] The US interpleader statutes achieved their modern form in 1948, providing that the action may be invoked whenever two or more adverse claimants claim to be entitled to one or more of the benefits arising from a single obligation.[cclix] Only a "minimal threshold level of substantiality" is required to demonstrate that adverse potential claims exist.[cclx]

Though generally not characterized as a rate-setting mechanism, the interpleader action, which enables a court to assert jurisdiction over multiple parties in order to allocate a finite pool of assets amongst them, serves similar functions to rate-setting. In this regard, the allocation of asset shares amongst competing claimants in an interpleader proceeding bears significant similarity to the allocation of royalty shares among participants in a patent pool. It is for this reason that Bartlett and Contreras proposed interpleader as a potential option for establishing aggregate FRAND royalties.[cclxi]

III. CURRENT METHODS OF RATE-SETTING FOR SEPS

Today, there is not a non-judicial governmental administrative function anywhere in the world that determines FRAND rates for SEPs, though one has been proposed in Europe (see Section IV.A). The primary method by which FRAND royalty rates are determined today is through

bilateral negotiation between SEP holders and individual licensees – a method that has been criticized as unfair, discriminatory and inefficient. This Section III discusses methods by which FRAND royalty rates have been determined other than bilateral negotiation, including collective action via patent pools, judicial determinations and bilateral arbitration.[cclxii] If an agency procedure is introduced to make such rate determinations, its designers would do well to consider the successes and failures of existing rate-setting procedures that have been utilized in the marketplace for three decades and more.

. *Private Collective Agreement (Patent Pools)*

In a patent pool, multiple patent owners authorize a common agent (sometimes one of the patent holders and sometimes a third-party administrator) to grant licenses to patents contributed to the pool, and net revenues are allocated among the pool participants in accordance with a pre-determined formula. Patent pools thus enable the manufacturer of a standardized product to obtain a license to many SEPs simultaneously and at a single royalty rate, thereby increasing licensing transparency, efficiency and eliminating the risk of royalty stacking.

Patent Pools for Standards

Patent pools have, over the past three decades, been formed in connection with a number of widely adopted consumer electronics standards such as the MPEG-2 audiovisual compression format, the CD and DVD optical storage formats, the 3G wireless telecommunication protocols and the RFID product identifier standard. More recently, Avanci was formed as an international licensing platform for wireless telecommunication standards in market verticals outside of traditional mobile telephony, such as connected vehicles, broadcast and smart meters. In each of these cases, the pool organizers sought and received favourable business review letters from the US Department of Justice (DOJ), which evaluated each proposed pool and

acknowledged features that reduced potentially anticompetitive effects.[cclxiii] For example, each such pool contained only patents that were essential to the implementation of the standard; licensees were free to obtain licenses directly from individual SEP holders, rather than from the pool; licensing of the pooled patents was conducted on a non-discriminatory basis; and the pool only included patents that were essential to implementation of the standard. Among the procompetitive effects that the Department of Justice attributes to pools is their ability to "create substantial integrative efficiencies by reducing the time and expense of disseminating . . . patents to interested licensees, clearing blocking positions, and integrating complementary technologies."[cclxiv]

Despite the benefits offered by patent pools, they are complex, time-consuming and costly to form, not least due to the common practice of checking the essentiality of every patent included in the pool.[cclxv] As a result, the large majority of SEPs are not licensed on a pooled basis.[cclxvi]

Rate-Setting by Pools

The organizers of a patent pool must make two related financial calculations when establishing a pool: the rates at which pooled patents will be licensed to licensees, and the portions of those royalties that will be allocated to each contributor of patents to the pool. There is no consistent method by which patent pools establish their third party licensing rates, which are dependent on a range of market factors including the value of the standard as to which the pool pertains, the value of the patents included in the pool to the overall set of patents essential to the standard, and the market value of the products that will incorporate the standard.[cclxvii] Rates may be denominated either as a lump sum, a fixed amount per product, or a percentage of the net selling price of products incorporating the pooled technology, and may include a variety of incentives to licensees including volume discounts, annual payment caps and "early bird" discounts.[cclxviii] Importantly, these rates and discounts are typically offered uniformly to licensees of the

pooled patents on a nondiscriminatory basis and individual discounts and rates are seldom negotiated.[cclxix] In addition, the rates charged by the pool are typically constant and do not vary as patents are added to or subtracted from the pool.[cclxx]

Pools must also determine the manner in which royalties collected by the pool will be allocated among the holders of the pooled patents. Historically, three basic methodologies have been employed to allocate royalties: (1) pro rata distribution, in which royalties are divided evenly among pool members, (2) numerical proportionality, in which royalties are divided based on the number of pooled patents held by each pool member when the pool is formed, and (3) the value of the patents held by each pool member, as computed according to an agreed formula or assessment.[cclxxi] Combinations of these approaches are also used, and sometimes take into account the addition or subtraction of patents to the pool over time.[cclxxii] Recent pooling arrangement, such as the Avanci licensing platform, allocate shares to pool members according to formulae that are quite complex – a complexity that is largely invisible to licensees that pay a royalty based on a simple rate schedule (e.g., $20 per vehicle that implements 4G connectivity).[cclxxiii]

Judicial Determination

As discussed in Part I.A, courts around the world have been called upon to adjudicate the level of royalties that SEP holders can validly charge or, in the words of some commentators, to engage in judicial rate-setting.[cclxxiv] The results have been highly variable, with some courts determining FRAND rates that are a tiny fraction of the SEP holders' original demands, and others finding that SEP holders' demands are reasonable as originally presented.[cclxxv]

Over the past decade, a large amount of literature has been devoted to the analysis of judicial efforts around the world to determine FRAND licensing rates for SEPs.[cclxxvi] This Section summarizes the principal

features of judicial FRAND rate-setting as it has evolved over the years.

National versus Global FRAND Rates

Courts adjudicating FRAND disputes face a dilemma. On one hand, patents are issued under national law and, by definition, have legal effect only in the issuing jurisdiction (or region, in the case of European patents). On the other hand, the parties to FRAND disputes are often multinational corporations with operations (and patents) in jurisdictions around the world. Many of these parties privately negotiate worldwide license agreements to cover their global operations, without regard for the particular patents issued in any given country. In resolving a dispute over FRAND royalty rates, a court must thus decide whether to focus only on the patents issued and asserted in its own jurisdiction, or to consider the global business relationship between the parties. Even though a national court typically lacks the authority to adjudicate damages with respect to the *infringement* of foreign patents, the fact that FRAND disputes are essentially contractual gives a national court the jurisdictional authority to determine a global rate for the portfolio licensed under the agreement in question (as opposed to infringement *damages* for patents in other jurisdictions).[cclxxvii]

In early FRAND rate cases, courts in the US limited their assessment of FRAND royalties to the national patents that were asserted. These cases include *Microsoft v. Motorola,*[cclxxviii] *In re. Innovatio,*[cclxxix] *Ericsson v. D-Link*,[cclxxx] and *Optis v. Huawei.*[cclxxxi] In each of these cases, a district judge or jury determined a FRAND royalty rate and awarded damages to the SEP holder based only on valid and infringed US patents.

However, in 2017, the High Court of England and Wales (Patents) ruled in *Unwired Planet v. Huawei*,[cclxxxii] that it was authorized to set the terms of a global FRAND license between the parties, including not only the small number of UK patents held by Unwired Planet, the SEP

holder, but also foreign patents covered by the FRAND commitment. The implementer, Huawei, argued that it only wished to obtain a license under the UK patents that Unwired Planet had asserted in the case.[cclxxxiii] In evaluating the reasonableness of Unwired Planet's license offer, the court first observed that the "vast majority" of SEP licenses are granted on a worldwide basis, with occasional exclusions.[cclxxxiv] It then observed that both parties were global companies: Unwired Planet held patents in forty-two countries, while Huawei had operations in fifty-eight countries.[cclxxxv] As a result, the court concluded that "a licensor and licensee acting reasonably and on a willing basis would agree on a worldwide licence."[cclxxxvi] In contrast, it reasoned, licensing SEPs on a country-by-country basis would be both unusual and inefficient.[cclxxxvii] Accordingly, the court determined global royalty rates that it deemed to be FRAND (with the rate for China and other countries being one-half that of "major market" countries),[cclxxxviii] and ruled that Huawei must accept a license on these terms or be subject to an injunction in the UK against the sale of products implementing the standard.[cclxxxix]

This "global" approach to judicial FRAND determinations has also been followed in China, most recently in *Oppo v. Nokia*.[ccxc] In that case the Chongqing Intermediate Court, like the UK court in Unwired Planet, set fixed per-unit royalty rates for China and less developed markets, and higher rates for developed markets such as the US and Europe. The court justified these differential rates based on "global patent distribution of the relevant countries, the income, the consumer buying power in relevant countries, the strength of the patents, etc., combined with GDP."[ccxci]

Some commentators have argued that US courts should follow the example set by UK (and Chinese) courts by setting global rates in FRAND disputes.[ccxcii] Others have countered that such global rate-setting exceeds the authority of national courts.[ccxciii] Whatever the legalities, global rate setting by national courts clearly has implications

for international relations and private litigation conduct. As this author has previously written,

> the ability of one national court to determine FRAND rates applicable to patents around the world can lead to two forms of legal "race". First is a "race to the bottom" among jurisdictions — a well-documented phenomenon in which jurisdictions intentionally adapt their rules, procedures and substantive outlook to attract litigants. Second, differences among jurisdictions are likely to encourage parties to initiate litigation in the jurisdiction most favorable to their positions as quickly as possible, often to foreclose a later suit in a less favorable jurisdiction. This situation is referred to as a "race to judgment" or a "race to the courthouse," which may prematurely drive parties to litigation rather than negotiation or settlement.[ccxciv]

Hypothetical Negotiation and Georgia-Pacific Factors

In the United States, the primary statutory measure of patent infringement damages is a "reasonable royalty."[ccxcv] As a result, several US courts that have calculated FRAND royalty rates for SEPs have looked to traditional methodologies for determining reasonable royalty damages, including the fifteen-factor methodology introduced in *Georgia-Pacific Corp. v. US Plywood Corp*.[ccxcvi] The *Georgia-Pacific* factors reflect a broad spectrum of considerations relating to a patent holder's and an infringer's potential gains from the infringed technology.

Nevertheless, one *Georgia-Pacific* factor has come to dominate the reasonable royalty analysis: Factor 15, the royalty that the parties would have agreed upon at the time the infringement began if they had reasonably and voluntarily tried to reach an agreement -- the so-called "hypothetical negotiation" test. As explained by one Federal district

court, “Despite the fact that this hypothetical negotiation factor is just one of the factors on the list, the hypothetical negotiation is a method for incorporating the other factors in order to arrive at a reasonable royalty rate.”[ccxcvii]

Even with this simplification, the *Georgia-Pacific* framework is premised on the assumption that the patent holder and the infringer have no pre-existing relationship or duty toward one another. As a result, many of the assumptions underlying this analytical framework do not apply in cases involving FRAND-committed SEPs. This general incompatibility has been noted in cases including *Microsoft Corp. v. Motorola, Inc*. and *Ericsson, Inc. v. D-Link Sys*., in which the courts have substantially modified the *Georgia-Pacific* factors to reflect constraints imposed by the SEP holder’s FRAND commitment.[ccxcviii]

Ex Ante versus Ex Post Value

As noted in Subsection 2 above, the *Georgia-Pacific* “hypothetical negotiation” test requires a court to determine the royalty that the parties would have agreed upon *at the time the infringement began*.[ccxcix] As a result, knowledge about the value of the patented (infringed) technology that arose after the infringement began should not be factored into the royalty determination, just as it would not have played a role in a voluntary negotiation between the parties.

This temporal limitation has come to play a significant role in the FRAND royalty analysis, as the value of a particular patent may increase by virtue of the patented technology being incorporated into a standard. As explained by Richard Stern,

> the value of a patent before it is incorporated into a standard (its *ex-ante* value) reflects only the merits of the patented technology. The *ex-ante* value of a patent is not as great a value as the patent acquires upon its anointment as a SEP (its *ex-post* value). This increase in value occurs regardless of whether a patented

> technology is incorporated into the standard because it is superior to all other patented or unpatented technologies and thus providing a unique functionality or, instead, because its selection and incorporation is merely an arbitrary design choice among several approximately equally satisfactory technologies providing the same functionality. The difference between *ex-ante* and *ex-post* values is sometimes referred to as the surplus value that standardization creates by its anointment of a patent as a SEP. The surplus is an increase in value resulting, primarily, from the combined action of network effect (interoperability) and exclusionary effect.[ccc]

The question, thus, is whether the surplus arising from standardization is more properly allocated to SEP holders or to implementers (or, as Stern argues, to consumers).[ccci]

US courts, following the guidance of *Georgia-Pacific*, as well as scholarly commentary[cccii] and the US Federal Trade Commission,[ccciii] have excluded from their FRAND royalty calculations any value that may accrue to a SEP based on its inclusion in a standard (the "ex ante" approach to SEP valuation). As explained by the Federal Circuit,

> the value of the technology is distinct from any value that artificially accrues to the patent due to the standard's adoption. Without this rule, patentees would receive all of the benefit created by standardization—benefit that would otherwise flow to consumers and businesses practicing the standard. We therefore reaffirm that reasonable royalties for SEPs generally—and not only those subject to a RAND commitment—must not include any value flowing to the patent from the standard's adoption.[ccciv]

The European Commission has likewise accepted the *ex ante* approach to SEP valuation, stating in its 2017 Communication to the

European Parliament and others that "the economic value of the patented technology … primarily needs to focus on the technology itself and in principle should not include any element resulting from the decision to include the technology in the standard."[cccv]

This approach differs, however, from that adopted by courts in the UK. For example, in *Unwired Planet*, the High Court observed, based on the testimony of economics experts in the case, that "it is not necessary to deprive the patentee of its fair share" of "some of the value that is associated with the inclusion of his technology into the standard and the value of the products that are using those standards."[cccvi] As such, the court acknowledged that it "may be differing from certain parts of the opinions in *Innovatio IP Ventures* and *Ericsson v. D-Link* in the US."[cccvii] Subsequent UK courts have likewise adopted this approach.[cccviii]

While the UK position may currently be in the minority, several commentators have argued in recent years that at least a portion of the *ex post* value of standardization should be included in FRAND rates.[cccix]

Comparable Licenses

Perhaps the technique most commonly utilized by courts assessing FRAND royalty rates is the analysis of "comparable" licensing agreements.[cccx] This technique seeks to gain information about the appropriate FRAND royalty rate by reference to the rates charged by the SEP holder to other licensees of the same or similar SEPs. As J. Gregory Sidak explains,

> Royalties negotiated in real-world transactions accurately reveal the prices that the parties to those licenses consider to be fair, reasonable, and nondiscriminatory ... Royalties from comparable licenses thus enable the adjudicator to relate the FRAND royalty to the incremental value of the patented technology and to

avoid speculation that could distort the determination of a FRAND royalty.[cccxi]

In the US, reference to comparable licenses is common to many patent damages cases across industries, including cases involving non-SEPs. It has roots in *Georgia-Pacific* Factor #1, calling for consideration of "[t]he royalties received by the patent holder for licensing the patent, proving or tending to prove an established royalty". The English courts, too, have relied on comparables in conducting the FRAND analysis, most notably in *Unwired Planet v. Huawei*, in which the court found probative the rates used in comparable licenses granted by Ericsson under the same patents that it later transferred to Unwired Planet.[cccxii] Likewise, courts in Germany have typically referred to comparable licenses when evaluating FRAND licensing offers,[cccxiii] as have courts in China.[cccxiv]

Of course, as the US Court of Appeals for the Federal Circuit has acknowledged, "Prior licenses … are almost never perfectly analogous to the infringement action."[cccxv] Thus, one of the principal tasks of courts undertaking the comparability analysis is determining when licenses with other parties covering different SEPs for different implementing products are similar enough to be used as benchmarks for a particular FRAND rate determination. For example, as the Federal Circuit has noted, "allegedly comparable licenses may cover more patents than are at issue in the action, include cross-licensing terms, cover foreign intellectual property rights, or … be calculated as some percentage of the value of a multi-component product."[cccxvi] Brian Love and Christian Helmers, in a 2022 empirical study of SEP licenses, found "substantial heterogeneity in royalty structures and amounts, as well as with respect to licenses' technological and geographic scope."[cccxvii]

The existence of differences among licenses, however, need not disqualify non-identical licenses from consideration as probative evidence in a FRAND royalty analysis. As the Federal Circuit observed

in *Apple v. Motorola*, "whether these licenses are sufficiently comparable … goes to the weight of the evidence, not its admissibility."[cccxviii] The acceptance of different licensing agreements as comparable appears to vary significantly by court and case, though a 2023 European Commission analysis of US and UK SEP disputes finds "that the majority of potentially comparable licenses discussed in the decisions was ultimately not considered comparable".[cccxix]

The European Commission's Expert Group[cccxx] summarized the following factors that are considered when assessing comparability of licensing agreements:

> (a) the technological complexities of the standards, (b) the SEPs or SEP portfolios; (c) the licensed products; (d) the royalty structures; (e) the identity of the licensees and their position in the product markets where they operate (whether they are "similarly situated"); (f) other licence terms, such as the term of the agreement and geographical coverage, or the existence of cross-licences or other forms of compensation; (g) the comparable rate falls in a similar timeframe, etc.[cccxxi]

Even if licenses are outwardly similar, differences may arise in the circumstances under which they were concluded. For example, in *Microsoft v. Motorola*, the court excluded from consideration several licenses that the SEP holder proposed as comparables on the basis that they were "too contextually dissimilar to be useful to the [F]RAND rate calculation."[cccxxii] One reason for rejecting such agreements was that they were entered into in settlement of litigation or "were formed under threat of litigation".[cccxxiii] Others have observed that the use of comparable licenses is circular and could lead parties to inflate royalty values.[cccxxiv] Finally, the use of comparables is suspect because it relies on information contained in confidential agreements to which only the SEP holder has ready access, leading both to asymmetries in

negotiation leverage and potential “cherry picking” of agreements as comparables.[cccxxv]

Issues like these have led some commentators to question the probative value of “comparable” license agreements as measures for patent damages.[cccxxvi] Other commentators, however, have suggested techniques that, if applied by courts, could improve the probative value of inexact comparable licenses to patent damages determinations.[cccxxvii]

Once comparable licenses are identified, the European Commission Expert Group outlines techniques for using them in a FRAND royalty analysis: “The royalty may be assessed against the entire set of comparable agreements, or single licences selected by either party. An alternative is to use the set of comparable licences to define [a FRAND] range and then allow the parties to negotiate within that range.”[cccxxviii]

Royalty Base and SSPPU

Unlike royalty rates charged by many patent pools, which are denominated as per-unit fixed amounts (e.g., $20 per vehicle), the royalties for most non-pooled SEPs are stated as a percentage of the implementer’s net revenue earned from sales or licenses of a standardized product or service. As a simple matter of arithmetic, any per-unit fixed rate can also be stated as a percentage of an end product price, such that the $20 per-vehicle royalty noted above could also be denominated as 0.0667% of a hypothetical $30,000 average price of a 4G-enabled car. This example suggests that the choice between per-unit and percentage royalties should be irrelevant, but it is not. The difference lies in the choice of the royalty “base” against which a percentage royalty is applied. Thus, the $20 per-vehicle rate discussed above could be stated either as 0.0667% of the sale price of a car or as $5% of the wholesale price of a $400 in-vehicle navigation system. The amount paid is ultimately the same, but the percentage

varies significantly depending on the choice of the royalty base. Again, as a matter of arithmetic, the royalty base should be irrelevant, as the "correct" amount can be charged by varying the percentage royalty applied to the selected royalty base. But in many industries, this does not happen, and a percentage royalty rate becomes normalized or "sticky". And if the percentage rate becomes fixed, then the choice of royalty base becomes critical.

For this reason, much rides on which royalty base is selected for SEPs in markets such as smartphones, in which the price of a component (e.g., a chip or module) enabling compliance with a standard such as Wi-Fi or 5G could be in the range of $10, whereas the price of the smartphone into which that component is incorporated could be several hundred or over one thousand dollars. A SEP holder's income that can be earned by treating the royalty base as the price of a smartphone rather than that of a component, assuming a relatively fixed percentage rate, can be, as one SEP holder phrased it, "humongously more lucrative".[cccxxix]

As a result, two competing approaches to selecting the appropriate royalty base have emerged: the "smallest saleable patent practicing unit" (SSPPU) approach, in which the royalty rate is multiplied by the sale price of the smallest infringing component that is sold as a stand-alone unit (e.g., a chip or module),[cccxxx] and the "entire market value rule" (EMVR), in which the royalty is based on the value of the complete end product implementing the patented feature (e.g., a smart phone, computer, or vehicle).[cccxxxi] There is now a growing literature debating the relative merits of these differing approaches to FRAND royalty calculation,[cccxxxii] and at least one major SDO has noted the SSPPU as an "optional consideration" when determining FRAND royalty rates.[cccxxxiii]

As the US Court of Appeals for the Federal Circuit has explained,

> where the entire value of a machine as a marketable article is 'properly and legally attributable to the patented feature,' the damages owed to the patentee may be calculated by reference to that value. Where it is not, however, courts must insist on a more realistic starting point for the royalty calculations by juries—often, the smallest salable unit and, at times, even less.[cccxxxiv]

Among the reasons advanced by SEP holders for utilizing the EMVR approach when calculating FRAND royalties is that the standard may drive demand for the entire end user product, rather than only the component covered by the relevant SEPs.[cccxxxv] Others have argued that some SEPs claim not only the features of a chip or other component embodying a standard, but the entire end user product or network in which the product operates. As such, the "smallest" unit practicing the entire SEP is the end user product, rather than any one component (making the EMVR approach appropriate in these cases). Finally, commentators point to the "widespread" industry practice of charging royalties on the net selling price of the end user product (handset).[cccxxxvi]

Top-Down versus Bottom-Up Royalty Calculations

Royalty Stacking Concerns

Even if individual adjudicated royalty rates for SEPs can be considered "fair" and "reasonable" in isolation, when large numbers of patents are involved, it has been theorized that the sum of those individual royalties could exceed the fair value of the patented technologies included in that standard -- the familiar issue of royalty "stacking". Royalty stacking is a variant of the well-known Cournot complements problem in which different firms each control necessary inputs to production and act in an uncoordinated manner when charging a manufacturer for the use of those inputs.[cccxxxvii] As the US Court of Appeals for the Federal Circuit has observed,

> [r]oyalty stacking can arise when a standard implicates numerous patents, perhaps hundreds, if not thousands. If companies are forced to pay royalties to all [patent] holders, the royalties will 'stack' on top of each other and may become excessive in the aggregate."[cccxxxviii]

Researchers have debated whether royalty stacking is in fact a significant issue in practice, with a number of commentators finding little empirical evidence that aggregated royalty levels for technical standards are excessive.[cccxxxix] Nevertheless, the theoretical possibility of royalty stacking has motivated various policies intended to prevent such an effect from occurring in the future.

The Top-Down Approach

"Top-down" royalty calculation approaches seek to address stacking issues by looking first to the overall or aggregate level of royalties associated with a standard and then seeking to allocate the appropriate portion of this aggregate to individual SEP holders. Top-down approaches implicitly recognize that, when multiple patents cover a single standard, the rate charged by one SEP holder will necessarily affect the rates that the other SEP holders are able to obtain from a single implementer. Top-down approaches thus contrast with "bottom-up" royalty approaches, in which royalties due to individual SEP holders are determined independently of one another and the total royalty burden emerges only as the sum of its individual parts.

Top-Down Approaches in the Courts

Responding to these concerns, a number of courts around the world have explored the use of top-down royalty methodologies for standardized products. The US District Court for the Northern District of Illinois took a step in this direction in *Innovatio*, when it calculated an aggregate per-product royalty attributable to the Wi-Fi standard and then apportioned a fraction of this total to the plaintiff SEP holder.[cccxl] Likewise, in *Samsung v. Apple Japan*[cccxli], the Japanese Intellectual

Property High Court held that the aggregate royalty for the 3G UMTS standard should not exceed 5%, based on various public statements made by major SEP holders. It then allocated a portion of this total royalty to Samsung based on its share of the total number of SEPs likely to be essential to the standard.[cccxlii]

In addition, the High Court in *Unwired Planet* used a rough top-down royalty calculation to "cross check" its bottom-up calculation based on comparable license rates, ultimately finding the results of both calculations to be similar.[cccxliii] This approach, however, was not adopted by the High Court in *Interdigital v. Lenovo*, which rejected the SEP holder's proposed "top-down cross check" methodologies that were allegedly based on the court's reasoning in *Unwired Planet*.[cccxliv]

But only two months later, the court in *Optis v. Apple* endorsed a top-down approach, reasoning: "The best approach, as it seems to me, to resolving this articulation of the FRAND Question is to seek to price the value of the entire Stack to Apple, and then to apportion that price pro rata amongst the co-owners of the Stack in proportion with their holding…"[cccxlv] The court then proceeds in detail to derive an aggregate royalty rate for the entire "stack" of 26,600 patents covering the 2G/3G/4G standards, and then to determine that Optis was entitled to 0.61% of that aggregate royalty in respect of its 135 SEPs.[cccxlvi]

Determining the Aggregate Rate in Top-Down Analysis

One generally acknowledged shortcoming of top-down approaches is the difficulty of determining an aggregate value for the full set of SEPs covering a particular standard.[cccxlvii] Most courts that have applied a top-down methodology (e.g., *TCL v. Ericsson, Samsung v. Apple Japan, Unwired Planet v. Huawei*) have looked for this critical data to public statements made by a small number of SEP holders, often in press releases or product announcements and without significant supporting documentation. As observed by the court in Unwired Planet,

such “obviously self-serving” statements “have little value in arriving at a benchmark [FRAND] rate.”[cccxlviii]

Rather than relying on such public statements, the US district court in *Innovatio* first determined, based on expert testimony, the average profit margin on the sale of a Wi-Fi chip embodying the relevant standard.[cccxlix] It then multiplied this percentage by the average price of a Wi-Fi chip, yielding an average total profit.[cccl] The court concluded that a chip manufacturer could spend no more than its total profit on patent royalties, and therefore equated the aggregate royalty for *all* Wi-Fi SEPs to the chip maker’s total profit. While this methodology has merits, it also suffers from a number of questionable assumptions, such as allocating a product manufacturer’s entire profit to SEPs covering a single standard thereby preventing the manufacturer from investing any profit in further product innovation.[cccli] Thus, like aggregate royalty calculations based on public statements, the total profit methodology utilized in *Innovatio* may be found to lack precision.

Allocations under Top-Down Analysis

Once an aggregate SEP royalty for a standard is determined in a top-down analysis, this royalty must be allocated among the different SEP holders (or, at a minimum, some portion of that aggregate must be allocated to the SEP holder involved in the litigation giving rise to the rate determination). This allocation presents numerous challenges.

First, unlike patent pools that allocate royalties among pool members, there is no agreed mechanism for royalty allocation among uncoordinated SEP holders. The most straightforward allocation methodology that is used by pools, and which has been suggested for SEPs, relies on simple numerical proportionality (one patent equals one “share” of the royalty pool).[ccclii] But while the number of patents included in a pool is relatively well-defined, the number of SEPs that are actually essential to a particular standard (or that are even declared as essential to a particular standard) is far less clear. For example, J.

Gregory Sidak has pointed out that the judges in *Unwired Planet* and *TCL v. Ericsson* arrived at significantly different numbers of patent families essential to the same 2G, 3G and 4G standards at issue in their respective cases (in some cases differing by more than a factor of two).[ccliii]

Beyond numerical proportionality, other methods of apportioning an aggregate royalty pool among SEP holders have been proposed. These include basing a SEP holder's apportioned share on the number of forward citations of its SEPs, and by reference to the SEP holder's technical contributions to the standard in question.[ccliv] Each of these methods also has its shortcomings, and some commentators have suggested combining them in some manner.[cclv]

Finally, the European Commission Expert Group has proposed a "Present Value-Added Approach" (Proposal 45) "to estimate the aggregate royalty for an implementation of the standard as a fraction of the (appropriately discounted) future incremental value generated by the application of the technology covered by the SEPs in that implementation."[cclvi] This methodology considers the price increase that a patented technology would enable for a product implementing the relevant standard, which could be estimated using techniques such as hedonic price regression.[cclvii]

Bilateral Arbitration

In addition to litigation, parties have resolved some disputes regarding the terms of FRAND licensing commitments through bilateral arbitration and other private alternative dispute resolution (ADR) mechanisms.[cclviii] The use of ADR for the resolution of FRAND disputes has been viewed with favor by competition law and intellectual property authorities in the US, EU, China and Japan.[cclix] The US has statutorily permitted the arbitration of patent disputes since 1982,[cclx] and jurisdictions including Hong Kong and Singapore have also adopted statutes expressly permitting this.[cclxi] Courts in other

jurisdictions such as Japan and Germany have recognized the permissibility of arbitrating patent disputes, and the WIPO Arbitration and Mediation Center claims that "it is now broadly accepted that disputes relating to IP rights are arbitrable."[cccclxii]

This Section summarizes some of the principal considerations that have been raised with respect to the bilateral arbitration of FRAND disputes by SEP holders and implementers.[cccclxiii]

Potential Benefits of ADR for FRAND Disputes

In 2014, the European Commission acknowledged the potential benefits of resolving FRAND disputes through ADR, including rapid resolution of conflicts, low costs (compared to multijurisdictional litigation), the availability of arbitrators with subject-matter expertise, the lack of undue bargaining pressure resulting from the possibility of court-ordered injunctive relief, and the finality of decisions (given the lack of appeal mechanisms in most ADR proceedings).[cccclxiv]

Another benefit of arbitration over court adjudication is that, unlike judicial awards, most arbitral awards rendered in accordance with the due process guarantees of the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards are recognized and enforceable in all countries that are parties to the Convention.[cccclxv]

In recent years, the jurisdictional conflicts raised by global FRAND litigation, including jockeying by different jurisdictions to set global FRAND rates and the issuance of anti-suit injunctions and related orders[cccclxvi] has led observers such as Lord Justice Arnold of the Court of Appeal of England and Wales to recommend arbitration as a desirable means for resolving global SEP disputes.[cccclxvii]

FRAND Arbitration Tribunals

There are a number of international arbitration tribunals around the world, and several of them have adopted special rules and procedures for the adjudication of patent disputes, including disputes concerning FRAND royalties. For example, the American Arbitration Association (AAA), which operates the International Center for Dispute Resolution (ICDR), has adopted Supplementary Rules for the Resolution of Patent Disputes.[cccLxviii] Likewise, the Munich IP Dispute Resolution Forum (associated with the Max Planck Institute for Innovation and Competition) has published "FRAND ADR Case Management Guidelines".[cccLxix] On a more international level, the World Intellectual Property Organization (WIPO), which established the WIPO Arbitration and Mediation Center in 1994, has developed a set of model documents for the submission of FRAND disputes for WIPO mediation or arbitration.[cccLxx] The International Chamber of Commerce (ICC) is the arbitral body designated for the resolution of disputes by the Digital Video Broadcasting (DVB) Project, an SDO in the field of digital television broadcasting.[cccLxxi] And, though relatively new, the Unified Patent Court in Europe has announced that it will establish a dedicated Patent Mediation and Arbitration Centre seated in Lisbon and Ljubljana.[cccLxxii]

Not surprisingly, objections can be raised with respect to virtually any arbitral institution. As described by Richard Vary,

> Some parties in FRAND arbitration discussions have objected to US arbitral institutions (e.g., the American Arbitration Association) on cost grounds, because (rightly or wrongly) they perceive tribunals established under the rules of those institutions as being more likely to order extensive discovery or depositions, and because they are perceived to give a home court advantage to US-based parties. Others have objected to the China International Economic and Trade Arbitration Commission or other

> national arbitral institutions because they (rightly or wrongly) perceive bias. The World Intellectual Property Organization has been criticised as an institution of IP holders, with a closed panel of IP practitioners. The criticism is presumably that it is likely to favour IP owners.[cccLxxiii]

"Mandatory" Arbitration

Lord Justice Arnold has argued that, in order for an international FRAND arbitration system "to work properly, it needs to be mandatory in the sense of being legally enforceable".[cccLxxiv] Parties generally have a legal right to seek redress for injury in any court system having jurisdiction. Accordingly, non-judicial or "alternative" resolution of disputes cannot be compelled; the parties must, at some point, agree to waive their right to judicial adjudication in favor of ADR. Such agreements, however, are often perfunctory, and US courts have held that such agreements to arbitrate disputes are enforceable even when contained in "boilerplate" consumer contracts and employment agreements.[cccLxxv] Agreements to submit to binding arbitration are also included in more complex licensing agreements and other commercial contracts.[cccLxxvi] In addition, SDO rules and policies may include agreements to arbitrate that are binding on SDO members.[cccLxxvii] Thus, when reference is made to "mandatory" arbitration, the meaning is usually binding arbitration to which the parties have previously agreed to submit.

The situation is somewhat different, however, with respect to ADR proceedings that are required by statute or administrative rule. One recent Court of Appeal case confirms that (in a housing-related dispute) requiring a party to avail itself of ADR mechanisms before resorting to litigation does not deprive that party of its constitutional right to access the judicial system.[cccLxxviii] Likewise, the proposed EUIPO FRAND rate determinations (see Section IV.A) will be required by law before legal proceedings may be initiated in Europe, though, as

noted in Section IV.A.3, legal challenges to this proposal have been suggested.

"Mandatory" arbitration requirements have been incorporated in the procedural rules of patent pools for many years.[cccLxxix] Likewise, a handful of SDOs, including VITA, the Digital Video Broadcasting (DVB) Project, and the Blu-Ray Disc Association, require that certain disputes among their members be resolved through binding arbitration.[cccLxxx] In contrast, other SDO policies merely state that members "may" arbitrate SEP-related disputes, in which case arbitration is effectively voluntary.

Though some commentators have encouraged SDOs to consider the imposition of mandatory arbitration requirements for SEP disputes,[cccLxxxi] others have raised a range of legal and pragmatic objections to mandatory arbitration.[cccLxxxii] In a 2016 survey of stakeholders, Régibeau and co-authors found that "[w]hile the majority of respondents seem to be favourable to the introduction of arbitration mechanisms, few appear ready to support making them mandatory."[cccLxxxiii]

In 2013, Professors Mark Lemley and Carl Shapiro proposed that SDOs adopt policies mandating that disputes over FRAND royalty rates be determined through binding "baseball" or "final offer" arbitration.[cccLxxxiv] Under this procedure, each party to the dispute would submit a sealed bid to an arbitrator who is limited to choosing one of the competing bids without modification. In theory, this approach is intended to drive both parties toward the submission of reasonable offers. In the context of FRAND disputes, however, several commentators, including this author, have rejected this proposal on both theoretical and practical grounds.[cccLxxxv]

Binding Non-Participants

Another important question relating to a mandatory ADR requirement is the degree to which an SDO may require non-participants (i.e., implementers that were not involved in developing the standard) to

participate in such proceedings. As discussed above, an SDO may impose binding requirements upon its participants through a variety of contractual and corporate means, but it has less authority to bind organizations that have not voluntarily acceded to its rules and policies.[cccLxxxvi]

There are several ways that this issue could be addressed. First, as this author has previously suggested, the SDO could affirmatively require, through a clickwrap or similar agreement, that each entity downloading or making use of its standards must agree to resolve any disputes regarding FRAND royalties through the mandated ADR procedure.[cccLxxxvii] Lord Justice Arnold has suggested a similar approach, in which "a contract is formed when an implementer makes a statement of compliance with the standard."[cccLxxxviii] And Michaela Halpern has analogized SEP arbitration to mandatory investor state arbitration, in which an agreement between states may bind private investors to arbitrate disputes with those states.[cccLxxxix]

These contractual approaches, while likely effective in binding implementers of a standard whether or not they participated in the relevant SDO, are less likely to bind holders of SEPs that did not participate in the SDO nor acquire their SEPs from SDO participants (true "outsiders").[cccxc] These cases, though documented, may be relatively rare.[cccxci]

Confidentiality and Transparency

Unlike litigation, in which court proceedings, rulings and evidence become, with few exceptions, part of the public record, arbitration proceedings are conducted in private. All parties, including the arbitrators, are obliged, either by law, ethical canon, or contract, to maintain the confidentiality of the evidence presented, the parties' arguments, and the arbitral award, absent an express agreement of the parties to the contrary.[cccxcii] This degree of confidentiality is one of the

principal attractions of dispute resolution through arbitration rather than judicial proceedings.[cccxciii]

This lack of transparency has been identified as a significant shortcoming of arbitration as a means for resolving FRAND disputes.[cccxciv] Among other things, keeping the results of FRAND determinations secret does little to help other parties seeking to establish FRAND rates for their own licenses; it also makes it more difficult to verify SEP holders' compliance with their nondiscrimination obligations under FRAND.[cccxcv] Supporters of arbitral confidentiality, on the other hand, argue that the resolution of FRAND disputes may involve determinations not only of the number, value and essentiality of particular SEPs, but also the value of those SEP's to a particular implementer's products – information that is not relevant to other SEPs or other products -- and public disclosure might cause later adjudicators to rely inappropriately on these context-specific determinations.[cccxcvi]

Under US law, the arbitration of patent validity and infringement must be public, and a notice of the award must be provided to the patent office, which will enter the notice in the prosecution history of the relevant patent(s).[cccxcvii] Mark Patterson argues that while these requirements have been "widely ignored", party agreements to keep the results of patent arbitrations confidential may run afoul not only of these requirements, but of US antitrust law.[cccxcviii]

Mediation of FRAND Disputes

An alternative to binding arbitration is mediation of disputes by a third-party mediator. As explained by Scott Blackman and Rebecca McNeill,

> During mediation, a neutral third party assists the conflicting parties in crafting a settlement. In contrast to an arbitrator, the mediator does not decide the outcome, but merely facilitates resolution between the parties. In

this process, the parties themselves try to create a solution that will work.[cccxcix]

Mediation proceedings, like arbitration, are usually confidential and result not in a decision by the mediator, but, if successful, in a mutually agreed settlement between the parties. There are few fixed rules for mediation, though arbitral bodies such as WIPO have published procedures and submission agreements for mediation of intellectual property cases.[cd] Some commentators have suggested non-binding mediation as a productive method for resolving FRAND disputes inexpensively and without recourse to more formal methods of dispute resolution.[cdi]

IV. PROPOSED RATE-SETTING MECHANISMS FOR SEPS

Given the proliferation of FRAND disputes around the world, perceived competition among jurisdictions to adjudicate worldwide FRAND rates, inconsistency of rate determinations from jurisdiction to jurisdiction, and a general lack of transparency in rates charged under private agreements, there have been numerous calls for the establishment of public rate-setting tribunals for FRAND rates. The most extensive of these has been the European Commission's proposal, issued in April 2023, for the establishment of a SEP Competence Centre within the EU Intellectual Property Office (EUIPO).[cdii] Other, less developed, proposals have been advanced in the United States, the EU and elsewhere. This Section describes both governmental and academic proposals as well as some of the arguments that have been made in support of and against them.

. *The EUIPO SEP Competence Centre*

The European Commission has long been focused on SEP licensing and disputes with a view toward improving the efficiency and fairness of the standardization system.[cdiii] After a series of official statements and public consultations, in April 2023 the Commission released a

formal proposal[cdiv] to the European Parliament and Council of Europe for legislation that would, among other things, establish a new SEP competence centre within the EUIPO (the "EUIPO SEP Centre"). The Centre would carry out its mission via four principal components: (1) determining an aggregate FRAND royalty rate applicable to a particular standard, (2) assessing a FRAND royalty rate between two parties, (3) creating a European SEP database and registry, and (4) checking the essentiality of patents included in the SEP registry. This Section IV.A summarizes the rate setting features of the Commission's Proposal (Items (1) and (2)). Essentiality checking (Item (4)) is discussed in Section IV.E.2, below.

Aggregate Royalty Rate Determination

The European Commission's Proposal permits SEP holders to notify the EUIPO SEP Centre of an agreed aggregate royalty for a particular standard, which the Centre will publish.[cdv] A group of SEP holders may also request that the Centre appoint a conciliator to mediate their discussion and negotiation of an aggregate royalty.[cdvi] In addition, no later than 150 days after the publication of a standard or the first sale of a product implementing the standard, any SEP holder or implementer may request that the Centre provide a "non-binding expert opinion on a global aggregate royalty" for the standard.[cdvii] The Centre will invite all known stakeholders to participate in this process, and if (i) SEP holders holding at least 20% of known SEPs and (ii) implementers representing 10% of the relevant market share[cdviii] or 10 small or medium enterprises ("SMEs"), express an interest in participating, then the Centre will appoint a panel of three conciliators to provide the requested expert opinion.[cdix] The conciliators will issue the opinion within eight months,[cdx] though this period may be extended by six or more months at the discretion of the conciliators.[cdxi] The opinion, which will be published by the Centre, must be supported by at least two of the three conciliators[cdxii] and must set out the relevant evidence and

methodology used.[cdxiii] The determination of the conciliators is non-binding.[cdxiv]

FRAND Royalty Rate Determination

Under Article 34(1), any SEP holder or implementer may request that a conciliator appointed by the Centre[cdxv] determine a FRAND rate for a particular implementation of a standard. This request must be made before either party has brought a legal action for infringement (in case of the SEP holder) or for a FRAND rate determination (in the case of the implementer). Under Article 37(1), the procedure will not exceed 9 months in duration.

The FRAND rate determined by the Centre is not binding. If a party does not agree to be bound by the Centre's determination, then the *other* party will be free to pursue its remedies in court.[cdxvi] However, Article 58(4) provides that no European court (including the UPC) may rule on a case involving a European SEP until the resolution of this rate setting procedure.

Reactions

Following its official release in April 2023, the European Commission's Proposal attracted significant commentary and media coverage. The Commission's initial call for evidence on the SEP system during 2022 attracted 157 sets of public commentary, and its call for feedback on the Proposal resulted in 78 additional submissions.[cdxvii] Critiques of the proposal fall into four broad categories: (1) those that claim the Proposal goes too far, seeking to solve problems in a well-functioning system with the likely result that standardization and innovation in Europe will be impacted negatively,[cdxviii] (2) those that largely support the Proposal, but find that it does not go far enough in terms of scope and transparency, among other things,[cdxix] (3) those that raise a host of practical and technical legal objections concerning the implementation details of the Proposal,[cdxx] and (4) arguments (made largely by SDOs) that the proposed SEP registry unnecessarily duplicates the functions

of databases that SDOs already maintain.[cdxxi] Specific issues raised with respect to particular rate-setting components of the Commission's Proposal are discussed in Part V of this Report where these components are separately analyzed.

The Proposed US Standard Essential Royalty Act (SERA)

In May 2022, a draft federal bill titled the "Standard Essential Royalty Act" (SERA)[cdxxii] was circulated among the members of several US Senate committees.[cdxxiii] The bill was not formally introduced in committee. Nevertheless, the draft SERA bill is worth consideration inasmuch as it presents a novel approach to FRAND rate determination from a major global economy.

SERA, if enacted, would establish a new five-member Standards Royalty Court with exclusive authority within the US:

> to determine a reasonable and non-discriminatory licensing royalty rate for all United States patents that (1) would necessarily be infringed by the practice of a technical standard; and (2) are committed to be licensed for reasonable and non-discriminatory royalties or on substantially equivalent terms.[cdxxiv]

For purposes of the Act, "A reasonable and non-discriminatory royalty rate is a uniform licensing rate that reflects the value of the claimed technology in view of alternatives that were available before the technical standard was adopted, if any." [cdxxv]

Any person may initiate an action under SERA to determine the FRAND royalty for all US SEPs that are essential to a particular industry standard. Within 120 days after notice of the action is published in the Federal Register, any entity that believes it is entitled to a royalty for infringement of such a patent may join the action as a

plaintiff.[cdxxvi] Each such plaintiff bears the burden of "proving with reliable evidence the value of the claimed technology in view of alternatives that were available before the standard was adopted."[cdxxvii] Likewise, any entity that seeks a license under such a patent may join the action.[cdxxviii]

The court will consider all relevant evidence submitted by the parties; may obtain the opinions of independent analysts and experts as to the value, validity, or essentiality of any patent under consideration; and may subpoena information or evidence from persons who are not parties to the action.[cdxxix] The court will determine (1) an overall (aggregate) reasonable royalty rate for implementation of the technical standard; (2) each plaintiff's entitlement to its appropriate portion of that royalty rate in view of the value of the technology claimed in the plaintiff's patent claims that is essential to the standard; and (3) such other terms as are appropriately included in a license to a defendant.[cdxxx] If additional actions are brought within a specified time period (e.g., 4-5 years), the court may adjust the rates originally determined "in view of the issuance of additional patents, the expiration of patents, and other appropriate evidence."[cdxxxi]

Given that one of the motivating factors behind SERA was the adjudication of global FRAND royalty rates by courts in other jurisdictions and the issuance of anti-suit injunctions against US proceedings, SERA includes several measures intended to thwart such non-US actions.[cdxxxii] First, it bars any person who participates in a "foreign governmental proceeding that would determine a royalty for, compel a license to, or impose a remedy for the infringement of a US SEP subject to a SERA action from participating as a plaintiff in a SERA action and from recovering any royalty adjudicated under SERA.[cdxxxiii] Moreover, SERA would bar the application of any such foreign proceeding with respect to any US SEP adjudicated under SERA.[cdxxxiv] Finally, if a party in a SERA action petitions a US court for an antisuit injunction barring another party's participation in such a

foreign proceeding, that foreign proceeding "shall be presumed to frustrate the policy of the United States and to threaten the *in rem* jurisdiction of the United States court", "such relief shall be presumed to be consonant with international comity" and "the court may also require the person to be enjoined to compensate the movant for any penalty, expense, or fee that is imposed on or incurred by the movant because of the foreign proceeding."[cdxxxv]

Group Negotiation of Aggregate Rates and Caps

As discussed in Part III.A, groups of SEP holders frequently coordinate licensing rates through patent pools, where procedural safeguards are put in place to ensure that the procompetitive benefits of pooling are not outweighed by anticompetitive restraints.[cdxxxvi] The licensor-side price coordination seen in patent pools typically does not occur, however, when SEPs are licensed individually by SEP holders to implementers, as such coordination, absent the procedural safeguards and efficiencies offered by pools, would likely run afoul of the antitrust laws.

Nevertheless, beginning in the early 2000s, SDO participants began to consider ways to define aggregate FRAND rates for standards. In 2002, Mark Lemley described an SDO proposal to cap the aggregate royalties that SEP holders could charge with respect to one of the 3G standards.[cdxxxvii] In 2005, Research in Motion (RIM) proposed to ETSI that aggregate royalty rates on particular standards could be capped.[cdxxxviii] In a related vein, in 2006 three ETSI members - Ericsson, Nokia, and Motorola – proposed an amendment to ETSI's patent policy that would have defined FRAND as requiring that "in the aggregate the terms are objectively commercially reasonable taking into account the generally prevailing business conditions relevant for the standard and applicable product, patents owned by others for the specific technology, and the estimated value of the specific technology in relation to the necessary technologies of the product."[cdxxxix] This proposal, known as "minimum change optimum impact" (MCOI), would

not have required the determination of a maximum aggregate royalty for ETSI standards, but would have established that such an aggregate royalty, presumably determined by courts adjudicating disputes over FRAND licenses covering ETSI standards, must be reasonable. These aggregate royalty proposals were not adopted by ETSI due, in part, to competition concerns raised by the European Commission.[cdxl] The idea of a jointly agreed aggregate royalty cap on SEP's covering a particular standard continued to attract interest among academic commentators into the mid-2010s.[cdxli]

In 2012, this author proposed that SDOs emulate patent pool rate-setting processes by allowing SDO participants, including both SEP holders and product manufacturers, jointly to establish aggregate SEP royalty rates for particular standards, as well as the allocation of the aggregate royalty among individual SEP holders (the "pseudo-pool" approach).[cdxlii] Over-declaration of SEPs was proposed to be addressed through a system of challenges and penalties. In 2021, the European Commission Expert Group made a similar proposal for "[d]etermining a reasonable aggregate royalty using one or more known valuation methods in a consultative process between SEP holders and implementers" (Proposal 42).[cdxliii] If this process does not result in a mutually agreed FRAND royalty structure within a reasonable time (e.g., 6 months), the Expert Group proposed that "an independent arbitration panel of experts may be entrusted to determine this aggregate royalty".[cdxliv]

In contrast to proposals that would involve SEP holders and implementers in a collective rate negotiation, other, more recent, proposals have focused on collective action on the implementer side of the equation only. For example, in 2019 Luke McDonagh and Enrico Bonadio, in a report commissioned by the European Parliament, proposed that "participants to a SSO should be allowed to collectively negotiate royalty rates on behalf of standard implementers, so as to counterbalance the strong bargaining power held by SEP-owners."[cdxlv]

In 2021, the European Commission Expert Group made a similar recommendation (Proposal 75), suggesting the formation of implementer collective licensing negotiation groups (LNGs) to negotiate licenses with particular SEP holders.[cdxlvi] Such LNGs would be particularly beneficial, the Proposal explains, "when individual members are smaller companies lacking the expertise and experience in SEP licensing".[cdxlvii] As explained by two commentators who served as members of the Expert Group, "LNGs can facilitate SEP licensing efficiencies through reduced transaction costs for both licensees and licensors, … create a level playing field among similarly situated implementers, … and reduce the threat of patent holdout, which in turn could increase the leverage toward unlicensed companies in a virtuous cycle."[cdxlviii]

This proposal, in particular, has raised objections grounded in competition law.[cdxlix]

Global Rate-Setting (GRS) Tribunal

In contrast to proposals based on collective negotiation of FRAND rates, in 2019 this author published a proposal (the "Global Rate Setting" or "GRS" proposal) for the formation of an impartial, non-governmental rate-setting "FRAND Tribunal" modeled on the US Copyright Royalty Board and similar adjudicatory bodies (see Section II.D, above).[cdl] As proposed, the Global Rate-Setting Tribunal would collect and consider evidence from all stakeholders – both SEP holders and implementers—regarding the market value and technological contribution of the patented and unpatented technology embodied in a particular standard, and then to consider the evidence in determining both aggregate FRAND rates for that standard and the allocation of royalties among individual SEP holders.

Mandatory and Optional Versions

Two versions of the Global Rate-Setting Tribunal are considered: mandatory and optional.[cdli] In the mandatory version, use of the

FRAND Tribunal would be required to determine FRAND royalty rates when SEP holders and implementers cannot mutually agree on them. Though this requirement could be imposed through various mechanisms, including statutory,[cdlii] regulatory, and treaty obligations, the most straightforward would be through binding provisions of SDO policies.

In the mandatory version, every SEP holder that is a member of the SDO would be bound through the SDO's policy documents to offer FRAND royalty rates consistent with the allocation schedule developed by the Global Rate-Setting Tribunal.[cdliii]

In the optional version, the Global Rate-Setting Tribunal would be available for parties on an optional basis, much as arbitration and other ADR mechanisms are currently available for the voluntary adjudication of FRAND disputes. SEP holders would not be bound by the findings of the Global Rate-Setting Tribunal, though its proceedings, and the resulting schedule of FRAND allocations, would be published and thus available to any court or other adjudicator. As such, it is likely that the Global Rate-Setting Tribunal's findings would at least be informative to a subsequent adjudicator.

Establishment, Composition, and Compensation of Tribunal

In order to avoid the threat of local bias, the Global Rate-Setting Tribunal was proposed to be situated within an international or non-governmental arbitral organization. These include institutions established specifically for the resolution of international disputes, such as the ICC, AAA, London Court of International Arbitration (LCIA), or an international non-governmental organization with a broader focus on technology and economic issues such as WIPO or the Organization for Economic Cooperation and Development (OECD). Though SDOs have traditionally been hesitant to become involved in royalty negotiations among their members, an international SDO with a broad base of support and international recognition such as the International

Organization for Standardization (ISO) might serve as a suitable host for the Tribunal. Other options include smaller and more specialized ADR bodies have arisen around the world, some of which (such as FedArb in the US) advertise expertise in patent disputes.[cdliv]

The initial expense of forming the Global Rate-Setting Tribunal and selecting its arbitrators would be borne by the Tribunal's host institution, with possible support from governments.

Ideally, the Global Rate-Setting Tribunal would have ongoing existence and will thus have a pool of arbitrators available to hear cases as they arise. Members of the Tribunal will be selected by consensus of the SDOs that have mandated the Tribunal's use in resolving FRAND disputes. Each arbitrator should have substantial expertise in technical standardization processes and not be employed by, or serve as a consultant to, any private company having a direct interest in the outcome of such disputes (i.e., a SEP holder or product manufacturer). The tribunal should not include individuals who serve primarily as government officials. It is anticipated that tribunal members will generally consist of retired judges, private legal practitioners and academics.

Individual cases will be heard by panels of three arbitrators selected at random from the pool. The Chair of the panel would be selected from among the three panel members.

Costs and Fees

Unlike conventional arbitration, the fees of the Global Rate-Setting Tribunal would not be paid by the parties initiating the proceeding. Rather, it is contemplated that SEP holders would impose a small surcharge on each royalty payment, which would then be remitted to the Tribunal to cover its costs and expenses. This approach would spread the cost of the Tribunal among all users of the standard, rather than burdening the parties initiating a proceeding that is likely to benefit the entire market or imposing the cost on the less successful party.

Authority

The proposed Global Rate-Setting Tribunal's authority would be limited to the determination of worldwide FRAND royalty rates for SEPs covering the standard(s) in question, as well as the allocation of these royalties among holders of the relevant SEPs. To make these determinations, the Tribunal would be authorized to consider issues of patent validity and essentiality. Its authority will not, however, extend to royalties for patents that are not SEPs. Likewise, to avoid distraction and keep the Global Rate-Setting Tribunal focused on the complex task of FRAND rate determination, its authority would not extend to other claims between parties (e.g., breach of contract, antitrust/competition law, patent misuse, fraud, inequitable conduct).

Procedure

A Global Rate-Setting Tribunal proceeding would be initiated when an SDO participant submits a petition for a FRAND rate determination with respect to a standard promulgated (or under development) by the SDO. The Global Rate-Setting Tribunal will consider evidence submitted by all interested parties, including SEP holders, implementers, and representatives of the SDO. SDO participants will be required to provide the Global Rate-Setting Tribunal with all reasonable information concerning their relevant SEPs, including past licensing terms (which will be disclosed confidentially and not shared except on an aggregated basis). Like the Copyright Royalty Board, the Global Rate-Setting Tribunal may choose to admit hearsay evidence and allow limited discovery.[cdlv]

The proposed Global Rate-Setting Tribunal would make decisions by majority vote, with any dissenting views specifically set forth in the tribunal's written opinion. The Global Rate-Setting Tribunal should aim to resolve all matters as expeditiously as possible, preferably within twelve months of initiation.

The Global Rate-Setting Tribunal's formal procedures[cdlvi] will be developed in compliance with the requirements of the New York Convention[cdlvii] so as to be binding and enforceable in all New York Convention signatory states.[cdlviii] This feature of the Global Rate-Setting Tribunal is critical, as recognition of its determinations under the New York Convention obviates the need for independent national rate-setting proceedings, thus eliminating the inconsistency that arises when multiple adjudicatory bodies address the same issues using different methodological approaches.

Essentiality

Given historical evidence of over-declaration of SEPs at major SDOs,[cdlix] the Global Rate-Setting Tribunal would be authorized to consider the essentiality of patents to the standards in question. However, a patent-by-patent analysis, particularly when hundreds or thousands of patents are at issue, would be impractical. Thus, an essentiality analysis would be conducted only in response to a party's presentation of evidence that a particular patent or patents is not essential to the standard. That is, there will be a rebuttable presumption that declared SEPs are essential to the standard. However, if a SEP holder is found to have declared non-essential patents as SEPs, the Global Rate-Setting Tribunal may impose reasonable penalties, such as reducing the SEP holder's apportioned share for those of its patents that are found to be SEPs.[cdlx]

Review and Appeal of Decisions

Unlike courts and administrative bodies established under national law, decisions of the Global Rate-Setting Tribunal will not normally be subject to judicial oversight or review. The only challenges to tribunal decisions will be those judicial challenges permitted to be made to any arbitral decision under the New York Convention—i.e., on grounds of bias, contradiction of law and public policy. An SDO that wishes to

make additional grounds for appeal available may adjust its policies to provide so.

Enforcement

The proposed Global Rate-Setting Tribunal would have no enforcement or collection authority. In the event that a party fails to pay the determined FRAND royalty, the SEP holder will be entitled to appropriate legal recourse, including an action brought under the New York Convention in the courts of any signatory state.

Public Disclosure

Unlike typical arbitration proceedings, the proceedings and decisions of the Global Rate-Setting Tribunal would be made publicly available in the interest of transparency and fostering consistency of future decisions. As in judicial proceedings, certain highly confidential materials may be placed under protective order and excluded from the public record.

Injunctive Relief

The rules of the Global Rate-Setting Tribunal would require SEP holders to refrain from seeking injunctive relief during the pendency of FRAND rate-setting proceedings, specifically those that are mandatory, but possibly optional proceedings as well. Doing so would reduce disruptions to the market while the royalty terms of required FRAND licenses are being assessed. This prohibition on injunctive relief would not, however, be permanent. Once FRAND royalty rates are determined for a specific standard, a SEP holder would be permitted to enforce its SEPs and seek injunctive relief against implementers that fail to pay the adjudicated FRAND rate within a reasonable period of time.

Related (Non-Rate-Setting) Proposals

The preceding Parts of this Section IV address different SEP FRAND rate setting proposals. This Part E turns to other proposals that have been made over the years relating to SEP licensing rates, but that do not directly involve the setting of FRAND rates.

Ex Ante Rate Disclosure Requirements

In the early 2000s, commentators began to suggest that the perceived lack of transparency in SEP licensing could be reduced by requiring patent holders to disclose the royalty rates and material licensing terms on which they were willing to license SEPs *prior to* the approval of a standard (before the fact or *ex ante*).[cdlxi] According to this theory, such a requirement would enable SDO participants to evaluate the cost of including particular patented technologies in a standard *prior* to adoption, and would thus enable more efficient decision making with respect to the technical design of the standard. That is, if a patent holder disclosed a royalty rate that was exorbitant, or multiple patent holders disclosed royalty rates that, in the aggregate, could not be supported by projected profits from the sale of products implementing the standard, then standards-developers could adjust the design of the standard to avoid one or more of these patents or opt for an alternative technology covered by fewer or no such patents early in the process.[cdlxii] These approaches, which have been characterized in the literature as structured price commitments, pre-announcements, pre-negotiation and auctioning, are generally referred to in the industry as "ex ante" disclosure approaches.

Critics raise three sets of concerns about *ex ante* disclosure policies: (1) such policies would give rise to antitrust and competition law risks by facilitating the improper exchange of information among competitors and encouraging implementers to coordinate the exertion of anticompetitive pressure on SEP holders to reduce their licensing rates to sub-FRAND levels,[cdlxiii] (2) such policies would inappropriately focus

standards developers' attention on patent licensing issues, making the overall standards-development process more cumbersome, lengthy, and expensive,[cdlxiv] and (3) such policies would likely reduce the royalties payable to SEP holders, often to suboptimal levels.[cdlxv]

SDO Ex Ante Disclosure Policies (VITA, IEEE, ETSI)

Notwithstanding these critiques, beginning in the mid-2000s, a number of SDOs began to discuss policy changes favoring *ex ante* disclosures. The first SDO to adopt an *ex ante* licensing disclosure policy was the VMEBus International Trade Association (VITA),[cdlxvi] which in 2006 received a favorable business review letter from the US Department of Justice.[cdlxvii] The IEEE Standards Association also proposed such a policy and received a favorable review from the Department of Justice,[cdlxviii] but elected to make the *ex ante* disclosure of licensing terms optional rather than mandatory.[cdlxix] Likewise, after significant internal debate, ETSI implemented a voluntary *ex ante* disclosure policy in 2007.[cdlxx] Unlike VITA, which has a mandatory *ex ante* licensing disclosure requirement, almost no *ex ante* licensing rate disclosures have been made at IEEE and ETSI, where *ex ante* licensing rate disclosures are optional.[cdlxxi]

NGMN Intermediary Disclosures

In addition to these SDOs, in 2006 a group of mobile telephone network operators formed the Next-Generation Mobile Networks consortium (NGMN). Although NGMN did not develop standards, it required each of its members to disclose to a trusted third party intermediary (a law firm) the royalties and other material terms on which it would be willing to license its patents essential to the implementation of certain industry standards.[cdlxxii] The third party intermediary then aggregated and anonymized this information and provided it in a confidential report to the NGMN members.

While the intent of this program was to provide useful SEP royalty information to NGMN members in a manner that avoided antitrust

issues, the program was beset by problems. First, the anonymous nature of disclosures apparently encouraged members to overstate royalty rates, resulting in aggregate rates for some standards exceeding the expected sale price of the equipment implementing the standards.[cdlxxiii] Others observed that the reported royalty structures were difficult to compare, and that the intermediary's reports were voluminous, making them cumbersome and difficult to use.

Voluntary Rate Disclosures

Even though not required, several large SEP holders including Qualcomm, Nokia, Ericsson and Huawei have, in the past, published their "standard" or maximum SEP licensing rates.[cdlxxiv] Rate disclosures such as these may be helpful both in enabling implementers to budget for royalty payments to these SEP holders and also in estimating the FRAND royalties that may be due to other SEP holders that have not disclosed their rates.

In 2021, the European Commission Expert Group proposed that SEP holders that offered licenses in line with such rate disclosures be "presumed not to be abusing a dominant position created through a standardization decision occurring after the declaration" (Proposal 41).[cdlxxv] Recently, Peters, Hoffman and Thumm have also suggested that SEP holders not be required to disclose their FRAND rates, but that if they elect to do so, an implementer would be obligated (under the Huawei-ZTE framework in Europe) "to proactively seek a license".[cdlxxvi]

Despite their potential benefits, maximum rate disclosures may not be entirely transparent, as these rates may be discounted in actual transactions, depending on the size and leverage of the implementer.[cdlxxvii] As such, a situation such as that with NGMN may evolve, in which disclosed rates are so high that a realistic picture of the aggregate royalty burden on a standardized product is not produced.[cdlxxviii] Likewise, Love and Helmers hypothesize that

announced FRAND rates “may represent an effort to artificially inflate future royalties by "anchoring" the market to rates that, in reality, are "aspirational" at best and diverge significantly from actual license agreements.”[cdlxxix] Most recently, Mr Justice Mellor observed in *Interdigital v. Lenovo* that, while Interdigital’s initiative to publish certain rates on its website “was to be welcomed”, it also did “not go nearly far enough and did not result in a transparent licensing programme,” but instead contributed to Interdigital’s ability to “try[] to obtain the maximum return from each [licensing agreement].”[cdlxxx]

Further Ex Ante Rate Disclosure Proposals

Despite the lack of adoption by SDOs, commentators have continued to suggest that SEP holders publicly disclose the terms, including royalty rates, on which licenses will be offered to implementers prior to the adoption of a standard. This idea was advanced and modeled by Josh Lerner and Jean Tirole, who proposed in 2015 that “after a discovery phase, IP holders noncooperatively announce price caps on their offerings, were their IP to be included into the standard. The SSO then selects the standard considering the price caps to which IP owners are committed.”[cdlxxxi] Unlike the voluntary disclosures of maximum rates described in Section c above, Lerner and Tirole argue that such “structured price commitments” be mandatory across the board to prevent SEP holders from forum shopping among SDOs based on their policies.[cdlxxxii]

Similarly, Régibeau and co-authors suggested in 2016 that SEP holders “voluntarily declare a maximum royalty rate” for their portfolios of SEPs in order to decrease the transaction cost of licensing.[cdlxxxiii] Along the same lines, the European Commission Expert Group recommended in 2021 that SDO participants be “encouraged to publicly announce their most restrictive licensing terms” (Proposal 38), possibly via an EU or SDO platform (Proposal 40).[cdlxxxiv]

In a related vein, in 2021 Gilbert and Contreras drew analogies to patent pools and focused on the nondiscrimination prong of the FRAND commitment in urging SDOs to require SEP holders "to post a royalty schedule for all patents that they declare essential to a standard early in the development of said standard."[cdlxxxv]

In its 2023 Horizontal Agreement Guidelines, the UK CMA expressed a lack of competition law concern with such ex ante disclosure requirements, either individually for SDO participants or collectively, observing that,

> should an SDO's IPR policy choose to provide for IPR holders to individually disclose prior to the adoption of the standard their most restrictive licensing terms, including their maximum royalty rates, or the maximum accumulated royalty rate to be charged, this will generally not lead to a restriction of competition … Such ex ante unilateral disclosures of the most restrictive licensing terms or maximum accumulated royalty rate would be one way to enable the parties involved in the development of a standard to take an informed decision based on the disadvantages and advantages of various alternative technologies.[cdlxxxvi]

Essentiality Checking

A SEP holder's obligation to grant FRAND licenses generally applies only to patents that are "essential" to the implementation of a standard.[cdlxxxvii] As a result, any assessment of FRAND rates, whether in the aggregate or bilaterally, depends, to a degree, on how many declared SEPs are actually essential to the relevant standard.

Because SDOs do not assess the essentiality of patents that are declared as SEPs, the essentiality of a particular patent to a particular standard is usually determined unilaterally by the patent holder with no external verification. This determination is often made at a time when a

given patent is still an application that is being prosecuted and the standard itself is not yet finalized. As such, the declaration of a patent as a SEP often constitutes a best (possibly optimistic) guess by the SEP holder as to the likely essentiality of an issued patent to a published standard.

Not surprisingly, given the potential revenue that may be earned from SEPs, and the potential liability that can arise under the antitrust and competition laws from the failure to disclose SEPs in compliance with an SDO's policies, SDO participants appear to have erred on the side of over-declaration of SEPs in relation to many standards.[cdlxxxviii] For this reason, the essentiality of declared SEPs to particular standards is frequently challenged in litigation, with the result that some patents asserted against products implementing standards as to which they were declared essential are found to be neither essential to the standard nor infringed by the product implementing the standard.[cdlxxxix]

Various proposals have been made to improve the reliability, and to reduce the cost, of assessing SEP essentiality, including computerized analysis of patent claims and sampling of declared SEPs by expert examiners.[cdxc] Yet there remains significant disagreement over the value and accuracy of essentiality checking using the sampling techniques that have been proposed to date.[cdxci]

Patent Pool Essentiality Checking

A number of important standards in the electronics industry (e.g., MPEG, CD, DVD) were historically developed by firms that pooled their patents for purposes of licensing on an aggregated basis. In order to avoid antitrust concerns, commentators and enforcement agencies today generally concur that the patents included in a pool should be complementary and not substitutes for one another.[cdxcii] Thus, patent pools are typically designed to include only patents that are *essential* to the standard that is the subject of the pool.

Given the importance of determining the essentiality of patents to be included in standards-based patent pools, most such pools obtain an independent analysis to verify whether or not patents are essential to the standard in question. The cost of patent essentiality review by independent experts (typically specialized patent attorneys) has been estimated to be in the range of US$10,000 per patent.[cdxciii] Merges and Mattioli (2017) estimate that the initial essentiality analysis for the establishment of the MPEG audio pool, which included approximately 700 patents, was $5.25 million.[cdxciv] In a recent court filing, Ericsson estimated that an essentiality assessment of its portfolio of 2,600 SEP families pertaining to ETSI's 2G, 3G and 4G standards would have cost approximately $26 million,[cdxcv] and Régibeau et al (2016) estimate the total cost of assessing the essentiality of the total pool of patents declared essential to 2G, 3G and 4G at 427.5 million Euro.[cdxcvi]

Costs in this range are among the reasons that most declared SEPs relating to standards developed within SDOs lack any external validation of essentiality.[cdxcvii]

The EUIPO Competence Centre Proposal

In the European Commission's 2022 stakeholder consultations, two-thirds of respondents stated that third party essentiality verification of SEPs could help "in assessing a product's SEP exposure and deciding whom to negotiate with, smooth[ing] licensing negotiation and prevent[ing] over pricing."[cdxcviii] Accordingly, the Commission's 2023 proposal introduces an essentiality checking function to the EUIPO Competence Centre.

Article 29(1) provides that the Centre "shall select annually a sample of registered SEPs from different patent families from each SEP holder and with regard to each specific standard in the register for essentiality checks." In addition, each SEP holder and implementer may propose up to 100 SEPs from different patent families for essentiality checking by the Centre.[cdxcix]

Essentiality checks will be conducted by an evaluator selected by the Centre.[d] SEP holders are permitted to submit a claim chart for any SEP subject to an essentiality check,[di] and any stakeholder may submit written observations regarding the essentiality of patents subject to the checks.[dii] In addition, the SEP holder may request that a "peer evaluator" (to be appointed by the Centre) consider the information presented and offer it to the Centre's evaluator.[diii]

The essentiality check "shall be conducted following procedure that ensures sufficient time, rigorousness and high-quality",[div] and the evaluator will issue a reasoned opinion with the result within 6 months following appointment.[dv]

While the proposed essentiality checking system could both identify nonessential patents declared as SEPs and possibly cause SEP holders to be more judicious in their declaration of SEPs, it has been criticized, including by this author, for its non-binding nature, its omission of other validity issues, its lack of any penalty associated with over-declaration, and its exclusion of SME-held patents (particularly given that a large number of SEPs are held by small patent assertion entities that would likely qualify as SMEs).[dvi]

The Japanese Patent Office Hantei Procedure

Since 1959, the Japanese Patent Office (JPO) has made available, for a fee of approximately 300 Euros, an advisory opinion (*Hantei*) regarding patent validity, technical scope and other issues.[dvii] In 2018, the JPO expanded the *Hantei* program to offer advisory opinions on the technical essentiality of Japanese patents to industry standards.[dviii] While these opinions are not binding on Japanese courts, they are viewed as facilitating settlement of disputes between parties.[dix]

A request for a *Hantei* essentiality opinion may be initiated by a party to a negotiation or other genuine dispute over the essentiality of a declared SEP. The counterparty is also given an opportunity to respond. Decisions are rendered by a panel of three administrative

judges and are made publicly available except to the extent that a party claims trade secret in some of the material used in the proceeding.[dx] It is expected that the judges will spend several days evaluating each such claim in a *Hantei* essentiality proceeding.[dxi]

As of March 2020, the *Hantei* essentiality checking system had not yet been utilized,[dxii] and there is no published indication that it has been used since. Explanations that have been proposed for this lack of usage include the complexity, stringency and narrowness of the procedure (e.g., only one patent is investigated per procedure).[dxiii]

Validity Challenges

Closely related to proposals for checking the essentiality of declared SEPs are a smaller number of proposals directed at checking the validity of patents declared as SEPs. Issued patents are, under most legal systems, presumed to be valid – that is, they are presumed to satisfy the requirements of patentability including novelty, nonobviousness and enablement. Yet this presumption, and the validity of issued patents, may be challenged both at patent offices (e.g., oppositions at the European Patent Office and inter partes review at the US Patent Trial and Appeal Board (PTAB)) and in court (e.g., as an affirmative defense in an infringement action or in a declaratory action directly challenging a potentially threatening patent). Validity challenges are often successful, and many patents asserted in litigation are found to be invalid when challenged.[dxiv] Mark Lemley and Tim Simcoe found, in a 2019 study of litigated SEPs, that SEPs that were the subject of validity challenges in 100 litigated US cases were found to be valid 83.7% of the time, compared to only 60.8% for non-SEPs.[dxv]

The European Commission Expert Group suggests that questions of validity may be "of particular importance" for SEPs "because SEPs are likely to be licensed and the validity of one or more SEPs may impact licensing negotiations with many parties."[dxvi] Accordingly, the Group advised that "additional measures may need to be considered to

increase the level of reliability with respect to a SEP's validity."[dxvii] The measures suggested by the Group include:[dxviii]

> (1) increased sharing by SDOs of draft standards and related information with patent offices (Proposal 19),
>
> (2) more in-depth prior art searches by SEP holders, including by specialized search companies or AI search tools (Proposals 20 and 21),
>
> (3) SDO encouragement of opposition proceedings against potential SEPs by SDO members and with the aid of SDO-appointed experts (Proposals 22 and 23),
>
> (4) creation of a "fast" third party arbitration procedure (possibly mandatory to adjudicate challenges to the validity of declared SEPs (Proposals 24 to 27).

FRAND Collecting Societies

In 2018, two German attorneys proposed[dxix] that SEP licensing could be improved by creating an independent private agency that SEP holders could join, and which would determine FRAND royalties for a standard and then collect those royalties from implementers like a copyright collecting society.[dxx] This proposal does not appear to offer much more than existing patent pools already offer with respect to SEP licensing.[dxxi]

In 2019, at a Munich conference, Judge Fabian Hoffman of the German Federal Supreme Court suggested a modified form of this proposal in which a collecting agency would be created "automatically" by operation of law upon the release of a new standard, and SEP holders would be required to join.[dxxii] Critics have questioned whether such a proposal, which would add an additional layer of complexity to FRAND licensing, would offer any improvement over existing patent

pool and platform arrangements, particularly if mandated by a government body.[dxxiii]

Other Academic FRAND Rate Reform Proposals

In addition to those discussed above, academic commentators have suggested a variety of additional creative methods for determining FRAND royalty rates.

One of the first of these was the "auction" approach proposed by Daniel Swanson and William Baumol.[dxxiv] They liken the selection of patented technologies for standardization to an auction in which patent holders compete, based on technical merit and price, to have their contributions included in a standard. This auction process should result in the selected technologies being priced at their incremental value above the next best alternative and excluding any "hold-up" value attributable to the later adoption of the standard.[dxxv] Thus, more than simply announcing their royalty rates, patent holders would be able to modify those rates in response to competitive pressure.[dxxvi]

In 2007, Mark Lemley proposed a "step-down" rate procedure in which the royalty rate charged by the first entity to declare a SEP covering a particular standard would be capped at a certain level (e.g., 5%), the next entity would be capped at a slightly lower rate (e.g., 3%), and so on until all remaining SEP declarants would pay a low but non-zero rate.[dxxvii] This proposal encourages early disclosure of SEPs, which could be of significant benefit, and bears similarities to "royalty stacking" clauses in biotechnology patent licensing agreements,[dxxviii] though these agreements typically involve small numbers of patents and patent holders. It is unclear, however, that the proposed step-down approach would be compatible with practices in the standardization setting, such as the vastly different numbers of patents disclosed by different SEP holders, the near-simultaneous disclosure of SEPs in response to an SDO's call for patents, and the disclosure of SEPs throughout an evolving standardization process as different technology

elements are added to and eliminated from a standards document. Lemley also acknowledges that the proposal "is imperfect, because the rates are not related to the intrinsic value of the technologies."[dxxix]

In 2011, Marc Rysman and Tim Simcoe proposed a framework called "Non-Assertion After Specified Time", or NAAST pricing.[dxxx] As they explain it, "A firm that commits to NAAST would give up the right to assert its patent after a period of time specified by the [SDO], for example, five years. Until that time, the IP holder would be free to license the patent at whatever rates it could collect." As a result, "IP holders will have an incentive to license their technology quickly with the threat of a non-assertion period growing closer. If vendors are willing to pay to be among the first producers in a market, then patent owners will obtain reasonable returns on their investment in a short period of time."

Finally, in 2018, Gunther Friedl and Christoph Ann proposed a cost-based approach for calculating FRAND royalties akin to that used in regulated industries such as telecommunication services and energy.[dxxxi] Under this approach, FRAND royalties would be based on the SEP holder's average total cost per patent plus a reasonable risk-adjusted return, where cost includes both R&D expenditures and patent prosecution costs.

V. CONSIDERATIONS FOR A FRAND RATE-SETTING SYSTEM

As illustrated in Part II, royalty determination and distribution proceedings conducted by rate-setting bodies in a range of industries share similarities with the types of determinations that would be required of a FRAND rate-setting tribunal: multiple parties with divergent interests are involved; the parties are initially permitted to work out an arrangement amongst themselves, but if they cannot, the tribunal's procedures are activated; and the tribunal is empowered to

compel discovery, conduct hearings, and otherwise adduce all relevant evidence.

As observed by Lord Justice Birss, “[s]imilar kinds of analysis are done in the United Kingdom Copyright Tribunal setting an appropriate royalty rate in a licensing scheme. The parties there are not challenging the underlying rights. The only issue is the tariff terms. There is nothing intrinsically unjusticiable about the issue to be resolved.”[dxxxii] A similar observation was made by Mr. Justice Henry Carr in a recent case management decision, in which he noted that the mechanics of FRAND rate determinations “are entirely familiar” to “those familiar with . . . the Copyright Tribunal” and “are not that complicated, and the courts are used to dealing with them.”[dxxxiii]

At a policy level, FRAND licensing bears similarities to several of the compulsory copyright licensing schemes discussed in Part II. As observed by Professor Tim Wu, compulsory licensing under the Copyright Act addresses the “problem deriving from copyright's grant of control over an asset essential to market entry (namely, copyrighted works), and the potential created for vertical foreclosure of rivals."[dxxxiv] The same may be said for other areas in which rate-setting has historically occurred: natural monopolies and other critical resources such as drugs and transport. As such, adopting rate-setting principles from these regimes in a FRAND context does not seem out of place.

This being said, the notion of formalized rate-setting for SEPs has attracted significant opposition from commentators who maintain that existing market-based FRAND rate determinations are optimal.[dxxxv]

Accordingly, this Part V identifies a series of design considerations that are relevant to the creation of a FRAND rate-setting system, drawing from historical rate-setting examples in the UK and US, as well as academic and industry commentary regarding the desirability and feasibility of implementing those considerations in a FRAND rate-setting system.

. *The Legal and Institutional Context for Rate-Setting*

Institutional Locus

As shown in Parts II, III and IV, rate-setting activity occurs across a range of different institutional settings or loci. These include governmental settings, both judicial proceedings and administrative/agency procedures, as well as private settings, which include both private adjudication by a third party (e.g., arbitration) and collective action by private parties. Table 1 below summarizes the institutional loci for the rate-setting activities discussed in this Report, organized by type and noting which of these activities are proposed versus actual.

Table 1

Institutional Loci for Rate-Setting Activity

	Rate-Setting Function	**Description**
A.1 - Private (collective)		
III.A	Standards patent pool	Patent holders with pool administrator
IV.C	Group Negotiation within SDOs (License Negotiation Groups and pseudo-pool) (proposed)	SEP holders and/or implementer collective rate negotiation
A.2 - Private (adjudicated)		
IV.D	Global Rate-Setting Tribunal (proposed)	Independent arbitral tribunal
III.C	FRAND Disputes (arbitrated)	Independent arbitral tribunal
B.1 - Government (judicial)		

	Rate-Setting Function	Description
IV.B	US Standard Essential Royalty Court – bilateral FRAND rates (proposed)	Special US federal rate court
III.B	FRAND Disputes (litigated)	National courts
IV.E.2.c	Japanese Hantei Procedure for essentiality checking	Japan Patent Office
II.e	US Performing Rights Organization Copyright Rates	US federal courts
II.I	US asset pools with multiple claimants	Statutory interpleader action in federal court
B.2 - Government (agency)		
IV.A	EUIPO Competence Centre – aggregate and bilateral FRAND rates (proposed)	EU-level agency
II.C	US public utilities	State public utility boards
II.D	US Copyright Compulsory License Rates	Copyright Royalty Board, with appeal to courts
II.F	UK Copyright Rates	UK Copyright Tribunal
II.G.1	US Federal Drug Pricing	Centers for Medicare and Medicaid
II.G.2	US Drug Pricing – State Level	State Prescription Drug Advisory Boards
II.H	UK Drug Pricing	National Health Service (NHS)

The institutional setting in which a rate-setting activity is situated is of critical importance. One of the major differences between governmental and private institutional bodies is the degree to which parties may be compelled to participate in a rate-setting proceeding and abide by its outcome. That is, participation in a governmental proceeding may be made mandatory within the jurisdiction of the authorizing body (e.g., state, federal, supra-national), while participation in a proceeding organized privately generally requires the consent of the participants.

Cost is another factor that distinguishes governmental and private institutional proceedings. Governmental institutions are funded by the public purse, while private ones are largely funded by the parties themselves. This being said, governmental bodies can, and usually do, impose fees on parties that avail themselves of governmental procedures (e.g., court filing fees).[dxxxvi]

In terms of decisional enforcement, however, institutional differences are less pronounced. Governmental institutions act with the authority of the state and may rely on state-backed mechanisms to enforce their decisions. For judicial decisions, this authority is ultimately manifested through the contempt power, which, at least in the United States, carries both civil and criminal enforcement means. Agency decisions may be enforced either through direct agency action or by recourse to the courts. Decisions of private institutions lack the direct enforcement power of the state, but state-based mechanisms, such as judicial process, may be utilized to enforce private contractual agreements. Likewise, under the New York Convention, private arbitral awards may be enforced through judicial proceedings.[dxxxvii]

An additional dimension of institutional choice involves transparency and openness. Governmental proceedings are often structured so as to allow public observation and the participation of interested parties. Private proceedings (e.g., rate setting by patent pools and bilateral arbitration), in contrast, generally do not seek to maximize

transparency and openness, though these principles have been incorporated into the policy-making procedures of some SDOs.[dxxxviii]

Competition law considerations arising from institutional choice are discussed in the next Subpart.

Competition Law Considerations[dxxxix]

Agreements among competitors concerning price are subject to scrutiny under the antitrust and competition laws of most jurisdictions. Thus, competition law must be considered with respect to any proposed rate-setting activity.

Governmental Rate-Setting

Antitrust and competition laws typically regulate conduct among private actors – "undertakings" in the language of TFEU 101 and 102. But while competition laws are not directly applicable to state agencies, member states of the EU are prohibited from enacting or enforcing laws that could diminish the effectiveness of competition rules.[dxl] This requirement has led to private challenges to legislation and regulation on the ground that it interferes with private competition.[dxli] Yet the European Court of Justice has consistently held that national legislation fixing prices is not condemned as a private arrangement achieving the same effect.[dxlii]

These issues were raised in the UK in connection with the EU's 2007 regulation capping the wholesale and retail rates that mobile operators could charge for international voice calls within the EU.[dxliii] The regulation was challenged in the High Court on three grounds: its legal basis is inadequate, it is disproportionate and it violates the principle of subsidiarity.[dxliv] The English court referred the case to the CJEU, which upheld the regulation, first observing that

> the regulation introduces a common approach so that users of terrestrial public mobile telephone networks do

> not pay excessive prices for Community-wide roaming services and so that mobile operators can operate within a single coherent regulatory framework based on objectively established criteria. It thus aims to contribute to the smooth functioning of the internal market in order to achieve a high level of consumer protection and maintain competition among operators of mobile telephone networks.[dxlv]

The CJEU also observed that "the high level of retail [roaming] charges had been regarded as a persistent problem by [national regulatory authorities], public authorities and consumer protection associations throughout the Community and that attempts to solve the problem using the existing legal framework had not had the effect of lowering charges."[dxlvi] The CJEU reasoned that the EU legislature was justified in acting when, absent such action, divergent national rules would likely be introduced by member states[dxlvii] -- a result that "would have been liable to cause significant distortions of competition and to disrupt the orderly functioning of the Community-wide roaming market."[dxlviii] The CJEU also upheld the regulation on grounds of proportionality and subsidiarity. Thus, while this was not a competition law case, as such, it highlights the type of complaint that could be raised against governmental price regulation in the EU and UK.

Objections to governmental price setting have also been raised in connection with pharmaceutical price regulation. As recently noted by Lady Rose of Colmworth, "[a]n argument that is often raised against government price regulation in relation to pharmaceuticals is that it stifles research and development and creates barriers to entry into the market."[dxlix] While these regulations have not yet been seriously challenged on competition law grounds, such a challenge could arise on the basis of arguments made in historical cases concerning cotton yarn and other wartime commodities (i.e., that anticompetitive

agreements may not be justified on the basis that they will encourage the industry to modernize and invest in R&D).[dl]

It is worth noting that under US law, actions taken by the government enjoy a greater degree of immunity from antitrust liability under the doctrine of sovereign immunity, which prevents governmental bodies from being sued in the federal courts, absent the government's consent to suit. As the U.S. Supreme Court has explained in relation to the federal antitrust laws, "where a restraint upon trade or monopolization is the result of valid governmental action, as opposed to private action, no violation of the [Sherman Antitrust] Act can be made out."[dli] State governments are immune from prosecution under the federal antitrust statutes under the "*Parker* state action" doctrine, which is grounded in principles of federalism and state sovereignty.[dlii] Thus, under both of these doctrines, rate-setting activity of a state or federal agency would not subject the agency to antitrust liability.

Private participation in government rate-setting activities

While governmental agencies themselves may not be at significant risk of antitrust or competition law liability in connection with rate setting activity, it is possible that the private parties (undertakings) involved in those activities might face liability.

The extent of immunity from European competition law for conduct within governmental proceedings has not been extensively analyzed, though in at least some cases the European Commission has referred to the US *Noerr-Pennington* line of cases (see below) as informative.[dliii] It does not appear that any EU cases involving standardization have been decided under this doctrine; the same applies to cases under the UK Competition Act.

In the U.S., it is clearer that conduct by private parties in connection with petitioning the government does not give rise to antitrust liability. This principle is known as the *Noerr-Pennington* doctrine. As the U.S. Supreme Court has explained, "the Sherman [Antitrust] Act does not

prohibit two or more persons from associating together in an attempt to persuade the legislature or the executive to take particular action with respect to a law that would produce a restraint or a monopoly."[dliv] This immunity stems from the First Amendment of the US Constitution, which guarantees that "Congress shall make no law … abridging … the right of the people … to petition the Government for a redress of grievances."

The *Noerr-Pennington* doctrine has been held to immunize conduct within SDOs from antitrust liability to the extent that it relates to petitioning the government (i.e., by developing a standard for adoption into governmental regulations).[dlv] However, antitrust liability may still arise in connection with deceptive conduct by the parties,[dlvi] or the conduct of commercial activity (even within a governmental setting) that does not amount to petitioning the government.[dlvii]

Additional antitrust immunities exist with respect to governmental rate-setting. In the US, under the judicial "filed rate doctrine", rates set by federal agencies cannot be challenged under state law or federal antitrust law.[dlviii] This immunity has been applied to bar antitrust challenges to rates set under the Interstate Commerce Act, the Natural Gas Act, the Federal Power Act and the Communication Act.[dlix] As explained in one leading treatise, "a court cannot allow a rate established by the Commission, pursuant to proper administrative procedures, to be the basis for an antitrust challenge, even if some portion of the filed-for rate was infected with an alleged antitrust infirmity."[dlx] But despite the immunity of filed utility rates to antitrust challenge, the authors explain that "conduct ancillary to the actual rate-setting procedure may be the subject of an antitrust claim."[dlxi]

In addition to rates set by governmental agencies, additional statutory immunities from antitrust liability exist in some areas such as interstate transport. As discussed in Section II.B, the Interstate Commerce Commission Act exempted from antitrust liability negotiated rate

agreements among surface carriers that were submitted to, and approved by, the ICC as furthering national transportation policy.[dlxii]

Private Rate-Setting through Arbitration

As noted in Section V.A.1 above, private rate-setting may occur either through private adjudication (arbitration) or collective negotiation.

It is possible that a FRAND rate-setting decision by a non-governmental arbitrator could be challenged on antitrust or competition law grounds. While this Report has not identified any case in which a FRAND rate-setting determination was so challenged, antitrust challenges have been brought with respect to other arbitral decisions involving patent licenses (usually seeking to set aside the decision rather than seeking to impose liability on the arbitral tribunal itself).[dlxiii] For example, in *Baxter International v. Abbott Laboratories*, a patent holder argued in a US court that the exclusivity clause of a licensing agreement, as interpreted by the arbitrator, resulted in an anticompetitive restraint, and that the arbitrator's award should therefore be set aside.[dlxiv]

Likewise, in *Genentech v Hoechst*, Genentech licensed three US and European patents from Hoechst. After a US court found that Genentech's product did not infringe the licensed patents, Genentech stopped paying royalties under the license, but an arbitrator adjudicating the resulting dispute ordered Genentech to make payment. Genentech then brought an action before the Court of Appeal of Paris to annul the arbitral award as inconsistent with Article 101 TFEU.[dlxv]

In addition to these issues, Mark Patterson has raised the specter of antitrust and competition law liability arising from agreements to maintain the confidentiality of FRAND rates determined in arbitration, given the importance of these rates to establishing competition in the market and US and European case law condemning the suppression of market information in a variety of contexts.[dlxvi]

As discussed in Section III.A, patent pools covering industry standards have set royalty rates through collective discussions among the pool administrator, participating patent holders and, in some cases, potential licensees.[dlxvii] The European Commission has acknowledged that "Technology pools can produce pro-competitive effects, in particular by reducing transaction costs and by setting a limit on cumulative royalties to avoid double marginalisation. The creation of a pool allows for one-stop licensing of the technologies covered by the pool."[dlxviii] The UK CMA, in its 2023 Guidance on Horizontal Agreements, references the EU guidelines.[dlxix]

Likewise, the US Department of Justice (DOJ) and Federal Trade Commission (FTC) have recognized the ability of patent pools to "create substantial integrative efficiencies by reducing the time and expense of disseminating … patents to interested licensees, clearing blocking positions, and integrating complementary technologies."[dlxx] In reviewing proposed standards-based patent pools covering the MPEG-2, CD-RW, DVD, 3G, RFID and other standards under its "business review letter" procedure, the DOJ indicated that it had no present intention to bring enforcement against the formation of these pools, provided that they undertook procedural safeguards to limit the potential for anticompetitive conduct.[dlxxi] These safeguards, which have generally been recognized in the US and Europe,[dlxxii] can be summarized as follows:

1. Transparency – the pool's royalty rates and terms are publicly disclosed.

2. Nondiscrimination – the pool offers the same rates and terms to all similarly situated licensees and will grant a license to any applicant that accepts those terms.

3. Independence – pool members are permitted to license their patents independently of the pool.

4. Voluntariness – pool members and licensees are not required to use the standard(s) covered by the pool in their products.

5. Essentiality – the pool will assess each pooled patent for essentiality to the standard.

6. Complementarity – the pool will not cover technologies that compete with or can be viewed as substitutes for one another.[dlxxiii]

In terms of openness, the US and European approaches differ somewhat. The US agencies have stated that "Pooling arrangements generally need not be open to all who would like to join," and competitive harm will generally not be found from exclusion unless "(1) excluded firms cannot effectively compete in the relevant market for the good incorporating the licensed technologies and (2) the pool participants collectively possess market power in the relevant market."[dlxxiv] The European perspective toward openness is more definitive, as the Commission's Article 101 Guidelines on Technology Transfer Agreements state that a pool will qualify for the "safe harbor" excluding application of Article 101(1) only if "participation in the pool is open to all interested technology rights owners."[dlxxv]

In relation to pool royalty rates, the US agencies have stated that they "generally do not assess the reasonableness of royalties set by patent pools."[dlxxvi] Rather, they "focus on the pool's formation and whether its structure, including the terms of the contract among pool participants, would likely enable pool participants to raise prices or restrict output in a relevant market."[dlxxvii] The European Commission is more prescriptive in its approach to pool royalty rates, stating that when a patent pool

"has a dominant position on the market, royalties and other licensing terms should be non-excessive and non-discriminatory."[dlxxviii]

Rate Disclosures and Caps

It has been alleged that policies permitting, or requiring, the exchange of FRAND license rate information among SDO participants could give rise to antitrust and competition law risks by facilitating the improper exchange of information among competitors and encouraging implementers to coordinate the exertion of anticompetitive pressure on SEP holders to reduce their licensing rates to sub-FRAND levels.[dlxxix] These concerns have arisen in the context of ex ante rate disclosure requirements (Section IV.E.1), maximum rate caps, and even the public disclosure of arbitrated FRAND rates (Section III.C.5).

As noted in Section IV.C, various aggregate rate cap proposals were made to ETSI during the mid-2000s. These proposals were not adopted by ETSI due, in part, to competition concerns raised by the European Commission.[dlxxx] Specifically, the Commission's Directorate-General for Competition issued a letter cautioning that an aggregate royalty cap, together with proportional allocation of the aggregate royalty among SEP holders, could preclude price competition by fixing the price of SEPs.[dlxxxi] More recently, while the UK CMA has stated in its 2023 Horizontal Agreement Guidance that "Agreements to reduce competition by jointly fixing prices either of downstream products or of substitute IPR or technology will constitute restrictions of competition by object,"[dlxxxii] it has also clarified that this prohibition should not apply to "genuine unilateral ex ante disclosures by individual IPR holders of their most restrictive licensing terms for standard essential patents or of a maximum accumulated royalty rate by all holders of complementary IPR."[dlxxxiii]

The threat of implementer-side buyers' cartels was again debated in the wake of IEEE's 2015 patent policy amendments. These amendments did not purport to set FRAND rates, but instead sought to

clarify aspects of IEEE's FRAND commitment such as the use of the SSPPU royalty base methodology.[dlxxxiv] Even so, commentators in Europe have speculated whether these policy changes amounted to actionable conduct under TFEU Article 101.[dlxxxv]

Collective License Negotiation

In 2021, as discussed in Part IV.C, the European Commission Expert Group recommended the formation of implementer collective licensing negotiation groups (LNGs) to negotiate licenses with SEP holders (Proposal 75).[dlxxxvi] This proposal has rekindled the discussion of the permissibility of collective rate agreements under competition law.[dlxxxvii]

Collective rate-setting by industry associations has a long history in the US and was historically immunized from antitrust liability under statutes such as the Interstate Commerce Act as early as the 1940s.[dlxxxviii] While some criticized this immunity as facilitating collusive price fixing,[dlxxxix] Andrew Popper has argued that the ability of industry participants to negotiate mutually-acceptable rate schedules in industries such as interstate transport enabled the survival of small and medium players in an industry that otherwise might be dominated by large concerns, thus serving the public interest.[dxc]

Absent a statutory immunity, collective rate setting by competitors requires antitrust analysis. In the context of SDOs, the analysis is somewhat different than rate setting within patent pools, as the focus in SDOs is largely on joint conduct of potential licensees (implementers) rather than SEP holders (though some proposals have included SEP holders as well).[dxci]

Following a set of 2007 hearings, the US antitrust agencies summarized the potential procompetitive benefits of collective rate negotiation within SDOs as follows:

> *Ex ante* licensing discussions may lead to price competition, in effect allowing for broader competition

> among alternative technologies vying for inclusion in the standard. Patent holders choosing to participate in the standard-setting process would compete against other patent holders, as well as against public domain technologies, on the basis of technical merit and on price and other licensing terms in order to have their technology included in the standard. *Ex ante* licensing discussions can thus preserve the benefits of competition that exist by increasing the *ex ante* knowledge of SSO decision-makers about licensing terms and may improve the quality of their decisions, enabling them to make tradeoffs between price and technical merit that are not possible unless the price of patented technological inputs is known before the standard is set. This *ex ante* knowledge may place an upper bound on a patent holder's RAND commitment, and it lowers the risk that users of a standard will face demands for more restrictive licensing terms after the standard is set than SSO members expected when they chose to include the patented technology in the standard. Reducing this risk may speed adoption of the standard in the marketplace.[dxcii]

Critics of joint negotiation proposals have argued that allowing implementers to negotiate prices with SEP holders on a collective basis could enable those implementers to exert oligopsonistic pressure against SEP holders, thus depressing royalty rates below reasonable levels.[dxciii] Whether or not caused by anticompetitive conduct, other economists have predicted that SEP royalties negotiated collectively will be lower than those that would be negotiated in serial bilateral transactions.[dxciv]

In response, Michael Carrier identifies several characteristics of SDOs that may reduce the risk of anticompetitive oligopsonistic behavior by

implementers in markets for standardized products. These include the involvement of SEP holders in royalty negotiations, the leverage that SEP holders wield in the standardization process, the unpredictability regarding which patented technologies will ultimately be included in a standard, and the practical inability of product manufacturers to reduce their purchases (i.e., of SEP licenses) to depress prices.[dxcv] Moreover, this author has noted that concerns about joint negotiation of *aggregate* SEP royalties raise fewer concerns than collective negotiation of rates between groups of implementers and a single SEP holder, as SEP holders can form their own negotiation coalitions to counterbalance any improper leverage by implementer groups.[dxcvi]

The US agencies in 2007 recognized potential anticompetitive risks of joint licensing negotiation, observing that the use of *ex ante* licensing discussions as "a sham to cover up naked agreements on the licensing terms each IP holder will offer the SSO", a means "to reach side price-fixing agreements" or an effort "to fix the price of standardized products" would likely be condemned as *per se* violations of the antitrust laws.[dxcvii] However, the agencies go on to note that these risks "are not sufficient to condemn all multilateral ex ante licensing negotiations, particularly given the fact that [t]hose developing standards already have extensive experience managing this risk." In contrast, they conclude that:

> [i]n most cases, it is likely that the Agencies would find that joint *ex ante* activity undertaken by an SSO or its members to establish licensing terms as part of the standard-setting process is likely to confer substantial procompetitive benefits by avoiding hold up that could occur after a standard is set.[dxcviii]

Based on this reasoning, the US agencies concluded in 2007 that joint *ex ante* negotiation of licensing terms in the standard-setting context should not be condemned as *per se* illegal, but rather evaluated under the more flexible rule of reason approach.[dxcix] Yet even under the rule

of reason, parties may act in an anticompetitive manner,[dc] and one DOJ official, speaking in 2020, cautioned that "[w]hen implementers act together within a standard-setting organization as the gatekeeper to sales of products including a new technology, they have both the motive and means to impose anticompetitive licensing terms."[dci]

Given these considerations, commentators have proposed governmental interventions to reduce concern over the competition law implications of collective FRAND rate negotiation. For example, this author has proposed that enforcement agencies update their intellectual property guidelines to address collective negotiation more specifically, that one or more groups considering a joint negotiation approach seek business review from the US DOJ, and that legislation such as the US Standards Development Organization Advancement Act of 2004, which already offers limited antitrust immunity to SDOs, be expanded to ensure that negotiation of aggregate royalty caps in standard-setting do not constitute violations of the antitrust laws, absent other anticompetitive conduct.[dcii] Peters and co-authors have similarly proposed that a regulatory "safe harbor" be created for LNGs based on the market share of the group members and conditioned on its adoption of procedural safeguards against anticompetitive collusion.[dciii]

Constitutional Law and Treaty Considerations

Any proposed rate-setting procedure must comply with applicable constitutional and treaty requirements. Recently, critics have asked whether the European Commission's EUIPO SEP Centre Proposal may violate the fundamental right to intellectual property under Article 17(2) of the EU Charter and Protocol 1, Article 1 of the European Convention on Human Rights (ECHR), as well as Article 28.2 of the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property (TRIPS Agreement).[dciv]

The principal areas of concern are the Proposal's requirements that (1) SEP holders that fail to register their SEPs in the EUIPO's new SEP registry will be barred from enforcing their SEPs against infringers until registration is completed,[dcv] and (2) SEP holders are required to participate for up to nine months in a proceeding to determine FRAND rates before they are permitted to enforce those SEPs in court in Europe.[dcvi] While the EU Charter permits state regulation of property rights, such regulation may be imposed only "in so far as necessary for the general interest", i.e., in a manner that is not disproportionate or intolerable. In its Impact Statement accompanying the Proposal, the Commission acknowledges that these restrictions may limit "the ability to enforce individual patents", but reasons that the proposal "is in the public interest in that it provides uniform, open and predictable information and outcome on SEPs for the benefit of SEP holders, implementers and end users, at EU-wide level, and in that it aims at promoting technological innovation and the dissemination of technology to the mutual advantage of the SEP holder and implementers."[dcvii] Yet critics disagree and argue that the restrictions do not, in fact, benefit SEP holders and are thus disproportionate and in violation of Article 17(2) of the Charter. Others disagree with this assessment, finding the restrictions to be reasonable, proportionate and consistent with the European Court of Justice's 2015 decision in *Huawei v. ZTE*.[dcviii]

Similar claims have been made with respect to the proposal's compliance with the TRIPS Agreement.[dcix] Here, critics point to the EU's recent WTO complaint against China,[dcx] in which the EU alleged that China's actions (i.e., the issuance of anti-suit injunctions preventing parties from pursuing parallel litigation in Europe) prevent SEP holders from asserting rights in intellectual property that are guaranteed to them under Article 28.2 of the TRIPS Agreement. The Commission, in its Impact Assessment, reasoned, among other things, that Article 30 of TRIPS permits curtailment of patent holder rights to

support “public interest objectives” such as those embodied in the proposal.[dcxi]

Decisional Authority of a FRAND Rate-Setting Tribunal

The scope of a FRAND rate-setting tribunal’s authority may vary significantly along a number of axes depending on the goals and constraints of its designers. This Section discusses some of the major axes of variation in authority with reference to the evidence collected in Parts II, III and IV.

Policy Goals

Despite its technical trappings, rate-setting can be designed to achieve different political and social goals. This phenomenon can be observed in long-running rate-setting activities that have spanned multiple political cycles. One of the longest-running rate-setting processes in the world involves US interstate transportation. As described by Paul Dempsey, the US Interstate Commerce Commission was formed in the late nineteenth century to protect the public from the monopolistic abuses of the railroads, then shifted to shield the transportation industry from unconstrained competition, then shifted again to accommodate the national trend toward deregulation, and most recently has been applied to stimulate competition in the interest of consumer welfare.[dcxii] Likewise, Jacob Noti-Victor argues that rate-setting for US copyright compulsory licenses has shifted from a scheme originally intended to broaden public access to copyrighted musical works on the model of public utility regulation, to one that is, today, designed to reflect commercial market transactions among copyright holders.[dcxiii]

As a result, the designers of any new rate-setting body and procedure should first consider the ultimate goal of the contemplated rate-setting activity. Should it exist to benefit consumers while permitting industry to

earn a sustainable profit, along the lines of drug pricing boards and utility rate commissions? Or should it create a level market playing field by reducing the leverage of dominant players, as the early ICC sought to do? Or should its principal goal be to foster innovation by channeling financial incentives to private firms that generate new technologies, as some SEP holders might argue? Or should its focus be on returning surplus to manufacturers or consumers of standardized products, as Richard Stern suggests?[dcxiv] Clearly, there is no "right" answer to these questions, yet no procedure can be designed that is entirely neutral with respect to them. Accordingly, the designers of a rate-setting system should make an effort to articulate the ultimate goals of the system and then seek to tailor its procedures to the achievement of those goals.

Subject matter authority

It is important, at the outset, to specify the matters within a rate-setting tribunal's competency to decide. In the case of a FRAND rate-setting body as contemplated by the Tender for this Report, the determination of bilateral and aggregate FRAND royalty rates would be required. The determination of aggregate FRAND rates should also encompass an allocation of the aggregate royalty among individual SEP holders.[dcxv] To make these determinations, a tribunal may also be required to consider issues of patent validity and essentiality.[dcxvi] However, in order to retain the tribunal's focus on the complex and detail-oriented task of rate-setting, its authority probably should not extend to other claims between the parties (e.g., breach of contract, antitrust/competition law, patent misuse, fraud, inequitable conduct), which should be adjudicated in court or arbitration. This limitation is generally consistent with other rate-setting procedures, other than those handled directly by courts (e.g., the US PRO rate court, which is a US district court of general jurisdiction).[dcxvii]

Binding versus Non-Binding Decisions

A fundamental question that will shape a rate-setting tribunal is whether its decisions will be legally binding on the parties before it or merely advisory in nature. Most of the rate-setting procedures described in this Report result in binding rate determinations, though some are subject to appeal.[dcxviii] Table 2 below summarizes the binding effect of rate determinations made by the different rate-setting bodies described in this Report.

Table 2

Binding Effect of Rate-Setting Activity

	Rate-Setting Function
Non-Binding	
III.C	FRAND Disputes (mediation)
IV.E.2.c	Japanese Hantei Procedure for essentiality checking
IV.A	EUIPO Competence Centre – aggregate and bilateral FRAND rates (proposed)
Binding, with procedural appeal	
III.B	FRAND Disputes (litigated)
IV.B	US Standard Essential Royalty Court – bilateral FRAND rates (proposed)
II.C	US state public utility commissions
II.D	US Copyright Compulsory License Rates
II.E	US Performing Rights Organization Copyright Rates
II.F	UK Copyright Rates

	Rate-Setting Function
II.I	US asset pools with multiple claimants
Binding, no procedural appeal	
III.A	Standards patent pool
III.C	FRAND Disputes (arbitrated)
IV.C	Group Negotiation within SDOs (License Negotiation Groups and pseudo-pool) (proposed)
IV.D	Non-Governmental FRAND Tribunal (proposed)
II.G.1	US Federal Drug Pricing
II.G.2	US Drug Pricing – State Level
II.H	UK Drug Pricing

Rate determinations that are non-binding are advisory only and parties cannot be compelled to abide by them, at least not by the bodies making those determinations. Nevertheless, non-binding determinations could have a persuasive effect on other adjudicatory bodies such as courts. That is, if a non-binding rate determination is made by a respected body with relevant expertise that has collected and considered a substantial body of relevant evidence in making its determination, its results will be informative to a court later considering the matter and may even be persuasive. To the extent that the rate determination, the tribunal's reasoning and the evidence supporting it are deemed to be admissible in a later judicial proceeding, the tribunal's proceeding will save the court time and resources, possibly expediting such a proceeding. Moreover, as suggested by the JPO with respect to its *Hantei* advisory opinion service, the parties to such a non-binding determination may themselves elect to abide by it rather

than continuing their dispute through litigation, thereby reducing costs for all.[dcxix] However, data is not available on litigation avoided by use of this service.

This being said, parties determined to maximize their advantage may not be eager to participate in a proceeding that will result in a non-binding rate determination (i.e., if they intend to proceed to litigation in any event). This may be why the non-binding Japanese *Hantei* procedure for essentiality checking has not been utilized.[dcxx] Critics, including this author, have argued that the non-binding nature of the determinations of the proposed EUIPO SEP Competence Centre reduce the value of those determinations both to the parties and to the public.[dcxxi] Specifically, with respect to the Centre's aggregate royalty determinations, the non-binding nature of the determination makes it less likely that stakeholders will expend the resources necessary to participate in the proceedings; and with respect to bilateral FRAND rate determinations, it seems likely that whichever parties are unhappy with the determination will challenge (or disregard) it in court.[dcxxii]

FRAND rate determinations may be made binding either through SDO rules or governmental edicts (legislation or regulation). As shown in Table 2, most governmental rate determinations are binding on the parties, though most of these allow for appeal of particular rate-setting decisions either within the relevant agency or to a specified court or courts.

Global v. National Rate Determinations

A FRAND rate-setting body would need, at the outset, to decide whether it intends to determine FRAND rates on a national or global basis.

It is typical that multinational parties negotiating FRAND licensing agreements do so on a global basis, though entities with a strong national focus may only seek licenses for their local markets. As a result, patent pools typically assess rates on a global basis, and the

proposals discussed above regarding collective FRAND rate negotiation would also most likely involve rates determined on a global basis (though there could be variance in rates across regions or countries).

Following this logic, many arbitration tribunals, following the instructions of the parties before them, will determine global FRAND rates to resolve global disputes (one of the major advantages of arbitration in multinational FRAND disputes).[dcxxiii]

However, as discussed in Section III.B.1, courts making FRAND rate determinations differ in the geographic scope of their decisions. While courts in the UK and China have demonstrated a willingness to set FRAND rates for SEPs around the world (and have been criticized for doing so),[dcxxiv] courts in the US have typically construed their authority as limited to setting rates for the US patents before them.

Outside of the FRAND context, almost all rate-setting by governmental bodies is national or sub-national in scope.

The choice whether a rate-setting body should determine national or global rates will impact litigation of the affect SEPs around the world and may also impact the ability of national courts in other jurisdictions to adjudicate the disputes before them (as disputes over FRAND rates will become moot once a global license is executed by the parties). Clearly, permitting a single adjudicatory body to determine global rates can make the overall FRAND rate determination process more efficient (as only one, rather than multiple, determinations will need to be made), though this efficiency may come at the expense of national sovereignty over patents issued in a particular jurisdiction. The proposed EUIPO Competence Centre, which will be authorized to set global FRAND rates, has been criticized by some for the expansive reach of its rate-setting authority.[dcxxv]

Potentially Probative Evidence

The legitimacy of a legal process derives, in part, from a consideration of all evidence that is deemed relevant to the question at hand. Accordingly, rate-setting procedures should consider a range of evidence concerning the relevant markets, products and rights at issue. In some cases, involving multiple rights and stakeholders, this body of evidence can become voluminous, and will be embodied both in written records as well as witness testimony.[dcxxvi]

Based on the examples discussed in this Report, the types of evidence that could be probative in FRAND rate-setting proceedings, and which a rate-setting body may wish to collect, include the following:

Value of contributions

As first outlined in *Microsoft v. Motorola*, FRAND determinations must take into account the value of a patented technology to a given standard and the importance of that standard to a given product. This evidence can be provided both by technical experts, who can evaluate the breadth and importance of individual SEP claims, as well as marketing experts who can speak to the importance of particular technical features to an overall product and market. In addition to the value of a particular patented technology, evidence relating to the value of other patented and unpatented features of a particular standard and product are useful to assess the relative value of the patented technology, as may be the contributions of the product user to the overall value of the product.[dcxxvii]

Comparable licenses

Many forms of rate-setting rely on “comparable” agreements or licenses in order to establish benchmark rates, and disputes over what licenses are sufficiently “comparable” to be utilized are commonplace. Thus, as discussed in Section II.F.3, the UK Copyright Tribunal has considered whether an agreement can be considered comparable for

rate-setting purposes if it was entered “in the shadow” of a pending reference to the Tribunal,[dcxxviii] the US Copyright rate court may view agreements as less than comparable if they were obtained through the exercise of market power,[dcxxix] though the US Copyright Rate Board may consider such agreements.[dcxxx] The suitability of comparable licenses has also been heavily debated in FRAND rate cases, as detailed in Section III.B.4. As in other areas of law, the principal points of contention are the threshold for comparability and the degree to which certain features of a license should disqualify it from consideration (e.g., whether it was entered into in settlement of litigation).

Given these considerations, a FRAND rate-setting body would do well to delineate as clearly as possible what types of licensing agreements would be viewed as comparable for evidentiary purposes. However, it seems inevitable that the body will need to analyze proffered agreements on a case by case basis in order to assess their probative value in any FRAND rate determination, as courts in the UK and US have done in numerous FRAND rate cases.[dcxxxi]

Development costs

NHS rate-setting in the area of prescription drugs takes into consideration a drug developer’s cost and profit margin, as well as the amount of support that it may have received from government sources.[dcxxxii] While proposals to link SEP pricing to cost are thus far limited to academia,[dcxxxiii] such information may help to establish the technical value of a patented technology.

Implementer costs and profit margin

In addition to SEP holder costs, the economics of the market for products implementing a particular standard may be relevant, particularly the profit margin typically enjoyed by implementers in that market. For this reason, the US court in *Innovatio* based its top-down FRAND royalty rate determination on the implementer’s profit

margin.[dcxxxiv] The level of implementer profits may also be useful as a check on potential royalty stacking, it having been observed that the accumulation of individually-determined FRAND royalties owed to multiple SEP holders could outstrip an implementer's entire profit (or even the selling price of the product in question).[dcxxxv]

While infringer profits are not often considered in the calculation of patent infringement damages, the damages regimes of many jurisdictions in North America, Europe and Asia (including Art. 13 of the EU IP Enforcement Directive) do permit the consideration of infringer profits in determining patent damages.[dcxxxvi] Of course, implementer profits will not be uniform across the entire market of standardized products, and while this measure of damages may be appropriate in a bilateral dispute between parties, it may be less probative when implementers of a standard are of varying sizes, operate in different markets, and offer products with different feature sets at different price points.

SDO policy interpretation

Because FRAND commitments arise from SDO policy documents, it is often important to understand the requirements of those documents in order to interpret the scope and nature of a particular FRAND commitment. While a few SDO policies (most notably that of IEEE[dcxxxvii]) offer guidance regarding the interpretation of their FRAND commitments, most do not, and even those that do omit most details regarding the calculation of FRAND royalty rates. As a result, adjudicators interpreting the requirements of an SDO's FRAND policy must sometimes rely on the testimony of individuals who either helped to draft those policies or operated under them for an appreciable period of time and can thus represent the general understanding of the policy among SDO participants.[dcxxxviii] Thus, when extrinsic evidence regarding accepted interpretations of otherwise ambiguous or incomplete SDO policy language is necessary, a rate-setting body

should be authorized to seek such evidence through testimony of reliable witnesses.

Legal standards

If the legal rules governing a particular SDO policy are not within the professional competency of tribunal members (e.g., UK members of the tribunal may not be versed in French law, which governs ETSI's policies), then reliable testimony regarding the relevant laws should be obtained through unbiased expert testimony.[dcxxxix]

Rate Calculation Methodologies

As discussed in Section III.B, there are numerous controversies surrounding the methodology for making FRAND rate determinations including: whether it is appropriate to assess a SEP's value by constructing a hypothetical negotiation among the parties (Section III.B.2), whether the value of a SEP should be assessed before (ex ante) or after (ex post) it is included in a standard (Section III.B.3), whether the royalty base should reflect the entire market value rule (EMVR) or the smallest salable patent practicing unit (SSPPU) (Section III.B.5) and whether rate determinations should be made on a bottom-up or top-down basis (Section III.B.6), among others.

While the procedures of the rate-setting bodies discussed in this Report do not necessarily answer these questions, they do illustrate different approaches to the specificity with which the authorizing statutes and rules of rate-setting bodies constrain the deliberations of those bodies. For example, the EU's proposed EUIPO SEP Centre, which is charged with determining both aggregate and bilateral FRAND rates, does not specify any particular methodology for determining either of these types of rates. Presumably, the Centre will rely on the expertise of the appointed conciliators to develop a fair and balanced approach to these rate determinations, though this intention is not stated in the Proposal.[dcxl]

Other bodies, such as the SDO IEEE, have offered minimal policy guidance to parties wishing to determine FRAND rates compliant with the IEEE's policies (i.e., by specifying that a "reasonable rate" excludes the value arising from the inclusion of a patented technology in an IEEE standard, that the SSPPU may be considered in determining a reasonable rate, and that the use of comparable licenses is acceptable in determining a reasonable rate).[dcxli]

Finally, as detailed in Section II.D.3.d, the methodologies by which the US Copyright Royalty Board (CRB) may establish rates for various compulsory copyright licenses are highly specified by its authorizing statute and have evolved over time. Thus, with respect to the original "mechanical" license, the Copyright Act originally specified a fixed statutory rate of $0.02 per copy, an unworkable solution that was replaced by a framework that was intended to maximize the availability of creative works to the public; afford copyright owners a fair return for their creative work and the copyright user a fair income; reflect the relative roles of the copyright owner and the copyright user in the product made available to the public and to minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.[dcxlii] This multi-pronged approach was then replaced in 2018 with the current "willing buyer, willing seller" standard, with its numerous considerations and constraints.[dcxliii]

Even more complex is the statutory scheme for the cable and satellite rebroadcast compulsory licenses under Sections 111, 119 and 122 of the Copyright Act, which have been described by commentators as ranging from "notoriously complex" to "incomprehensible".[dcxliv] The high-level rate guidance embodied in the Medicare drug pricing regulation[dcxlv] may give the tribunal greater autonomy and discretion in rate-setting, while at the same time providing guidance regarding the factors to be considered and goals to be accomplished by the rate-setting process.

This turgid history is informative, in that it makes clear that the current "willing buyer willing seller" standard adopted in the Copyright Act, and reflected in the "hypothetical negotiation" framework used to calculate patent damages in the US, is by no means the only way to conceptualize "fair and reasonable" royalty rates, and the drafters of regulations underlying any new FRAND rate tribunal's procedures should remain open to other approaches to this complex determination.

Clearly, some level of guidance is required for a rate-setting tribunal to operate in a manner that is consistent and insulated from repeated challenge and second guessing. Yet it is also not clear that micro-specification of rate-setting procedures is either advisable or practical prior to the tribunal's formation.

Allocations among SEP Holders

Separately from the question of *how* to determine FRAND rates is the equally important question *what* information a rate-setting body should produce. This question is particularly salient in connection with aggregate rate determinations, in which two elements exist side by side: the overall royalty burden on a particular standard (i.e., the sum of all SEP royalties on a product conforming to that standard), and the manner in which royalties are allocated among individual SEPs and SEP holders. As discussed in Section III.B.6.e, there are competing methodologies for making such allocations with tradeoffs of accuracy against expediency. Whatever method is used, however, it appears important for an aggregate FRAND rate determination to make some effort toward allocation, as failing to do this renders the aggregate rate meaningless in the face of individual SEP holder demands. Every judicial FRAND rate determination that has utilized a top-down methodology (i.e., an aggregate rate), has by necessity performed an allocation, at least as to the SEPs asserted in the action. For this reason, it is puzzling that the proposal for the EUIPO Competency Centre includes an aggregate rate assessment but does not appear to include any allocative analysis in its procedure.[dcxlvi] The Global Rate-

Setting Tribunal proposal, in contrast, includes an allocation among SEP holders in its procedure.[dcxlvii]

Effect on Injunctive Relief

A prohibition on parties' ability to seek injunctive relief against implementers during the pendency of rate-setting proceedings could be viewed as instantiating a SEP holder's promise to grant FRAND licenses to willing licensees by permitting the rate-setting body to conduct its determination in due course. Such a prohibition would reduce disruptions to the market while FRAND royalty terms are being assessed and prevent SEP holders from using the legal process (i.e., seeking an injunction) to pressure potential licensees to settle on unfavorable terms before the rate-setting body has made its determination.

Various precedents for such prohibitions exist. IEEE, the SDO that oversees the development of the Wi-Fi and other widely deployed networking and communication standards, prohibits its participants from seeking injunctive relief against "an implementer who is willing to negotiate in good faith for a license".[dcxlviii] Likewise, both the European Commission[dcxlix] and the US Federal Trade Commission[dcl] have issued orders prohibiting SEP holders from seeking injunctive relief for some period of time (i.e., 6 months) during negotiation of FRAND rates with willing licensees. The recent EUIPO SEP Centre proposal would also prohibit SEP holders from proceeding in court during the pendency of the Centre's deliberations – one of the proposal's more controversial features.[dcli]

It is important to note that in each of these cases, the prohibition on injunctive relief is not permanent. Once FRAND royalty rates are determined for a specific standard, a SEP holder is generally permitted to enforce its SEPs and seek injunctive relief against implementers that fail to pay the adjudicated FRAND rate within a reasonable period of time.

Procedural Design of a FRAND Rate-Setting Tribunal

There are numerous procedural dimensions of any rate-setting body, and reference to the examples discussed in Parts II, III and IV of this Report may illuminate the design requirements for a new FRAND rate-setting body.

Composition, Expertise and Size of Tribunal

Rate-setting tribunals range in size from a single judge to panels of three or more adjudicators to large groups of stakeholder representatives. Sbelow summarizes the characteristics of the tribunals described in this Report.

Table 3

Rate-Setting Tribunal Characteristics

Part	Rate-Setting Body	Tribunal Size	Tribunal Qualifications
A.1 - Private (collective)			
III.A	Standards patent pool	Stakeholder representatives	None
IV.C	Group Negotiation (proposed)	Stakeholder representatives	None
A.2 - Private (adjudicated)			
IV.D	Global Rate-Setting Tribunal (proposed)	3 arbitrators	Substantial expertise in technical standardization processes
III.C	FRAND Disputes (arbitrated)	1-3 arbitrators	Case specific
B.1 - Government (judicial)			

Part	Rate-Setting Body	Tribunal Size	Tribunal Qualifications
IV.B	US Standard Essential Royalty Court (proposed)	5 royalty judges	Ordinary judicial qualifications
III.B	FRAND Disputes (litigated)	1 (national judge)	Ordinary judicial qualifications
IV.E.2.c	JPO Hantei Procedure for essentiality checking	3 administrative judges	JPO judicial qualifications
II.D	US PRO rate court	1 (district judge)	Ordinary judicial qualifications
II.H	US interpleader proceeding	1 (district judge)	Ordinary judicial qualifications
B.2 - Government (agency)			
IV.E.2.b	EUIPO Competence Centre – essentiality checks	1 evaluator	TBD
IV.A.1	EUIPO Competence Centre – aggregate rates	3 conciliators	appropriate background from the relevant field of technology
IV.A.2	EUIPO Competence Centre – FRAND rate determination	1 conciliator	TBD
II.B	US State public utility commissions	Variable	Variable, may be elected
II.C	US Copyright Royalty Board	3 judges	Chief Judge – 5 years experience in

Part	Rate-Setting Body	Tribunal Size	Tribunal Qualifications
			adjudications, arbitrations, or trials Judges - significant knowledge in the field of copyright law and economics, with 7 years legal experience
II.E	UK Copyright Tribunal	Panels of 3: 1 Chair/Deputy, 2 ordinary members	Chairs – 5 years law practice or prior judicial experience Ordinary members – no requirement
II.F.1	US Federal Drug Pricing	Agency personnel	n/a
II.F.2	US State Prescription Drug Advisory Boards	Variable	Variable
II.G	UK National Health Service (NHS)	Agency personnel	n/a

As shown in Table 3, the size and composition of rate-setting bodies varies significantly. When rate-setting authority is situated within a governmental agency such as NHS or US prescription drug boards, no precise composition is specified, as the agency acts through its officers and staff to determine rates. When rate-setting authority is assigned to

a board or tribunal acting outside of, or ancillary to, an agency's ordinary staff, then a more structured specification for the tribunal is provided, as in the US and UK copyright rate-setting boards. No rate-setting body that specifies the number of adjudicators who will hear a single case specifies more than three, which appears to be the upper limit (though several tribunals have a larger membership, only three individuals will sit in any given case).

Given the technical nature of rate-setting, it may seem surprising that relatively few tribunals specify particular skills or qualifications for adjudicators. Agency personnel may simply be assumed to possess requisite technical qualifications (e.g., at NHS or the US CMS). Or the task of specifying the requisite qualifications for adjudicators may be too daunting for legislators, and may not, in the end, result in high-quality appointees.[dclii]

As a result, appointment criteria are often quite general. The proposed EUIPO Competence Centre must designate both "evaluators" (for essentiality checks) and "conciliators" (for rate determinations). The Commission's proposal states only that conciliators should have an "appropriate background from the relevant field of technology", but leaves further qualifications to implementing legislation enacted within 18 months after adoption of the proposal.[dcliii]

The US Copyright Rate Board implementing statute offers the greatest level of detail, requiring that the Chief Judge have at least 5 years experience in adjudications, arbitrations, or trials, and that the other two judges on a given panel possess significant knowledge in the field of copyright law and economics, respectively, and have at least 7 years of legal experience.[dcliv]

In some cases, adjudicators may be political appointees or elected officials with little or no technical expertise (e.g., US state public utility commissioners or UK copyright tribunal "ordinary" members). In cases of their appointment, it is left to the discretion of the appointing official

to select individuals capable of discharging the duties of the tribunal. Yet the political nature of these appointments, and associated capture, may be unavoidable[dclv] – a situation that US legislators have sought to address in high-level bodies such as the FTC and ITC by specifying the number of appointees from each major political party.[dclvi]

Some appointees to rate-setting bodies may, in addition to political operatives and technical experts, be consumer advocates, labor representatives or representatives of interest groups such as patients suffering from a disease treatable by a drug under consideration by a drug pricing committee. While individuals such as these may lack experience in economic and technical matters, they may bring to the tribunal additional perspectives that may prove valuable in the rate-setting process.

One issue that is not confronted by rate-setting bodies operating under the auspices of a national government is the potential for national bias (i.e., rates for transport, utilities, drugs, copyrighted works and the like are all set with respect to their usage within the country that has appointed the rate-setters). This issue, however, may be significant in the FRAND context, given different approaches to FRAND rates by the courts in different jurisdictions, as well as the perceived biases toward firms based in a rate-setter's "home" jurisdiction (and against firms based in trading rivals). To address this potential for bias, approaches can be borrowed from a range of international tribunals that contend with these issues. For example, the rules of the International Centre for Settlement of Investment Disputes (ICSID) provide that the majority of the arbitral panel in an investor state dispute must be nationals of states other than those involved in the conflict being arbitrated.[dclvii]

At a more general level, all such ICSID arbitrators must be persons able "to exercise independent judgment."[dclviii] This requirement could implicate not only national origin, but also industry allegiance. It is well-known in the world of standardization that organizations operating at different levels or segments of a market (e.g., component

manufacturers, end user product designers, consumers, research institutions, patent assertion entities) have divergent policy preferences and goals. As a result, many SDOs require “balance” among different stakeholder groups on technical committees, and this effort at balance has been argued by some to be needed with respect to SDO policy decisions as well.[dclix] Accordingly, it may be prudent for a FRAND rate-setting tribunal to seek members that are either entirely unaffiliated with any commercial interest (e.g., academics with no history of industry consulting) or to require balancing of individuals with ties to relevant stakeholder interest groups.

It should be borne in mind that no specific enumeration of potential conflicts of interest can eliminate all potential instances of bias in adjudicators. As a result, some institutions (such as the US federal judiciary) rely on general canons of ethics requiring judicial recusal under certain circumstances, rather than detailed filtering criteria around appointments.[dclx]

Finally, as noted in Section I.A, it is beneficial for rate-setting bodies to continue in existence beyond the resolution of particular disputes, as this enables its members to develop relevant expertise and custom that can be applied consistently from case to case.[dclxi] As such, members of the tribunal should serve for terms of a length that offers them the opportunity to participate in multiple rate determinations. Terms should also be staggered to avoid turnover of the entire tribunal at any given time.

Confidentiality and Transparency

It will need to be decided whether, and to what degree, a potential FRAND rate-setting tribunal would make public its proceedings, evidence, deliberations, reasoning and decisions. The rate-setting bodies discussed in this Report vary considerably in this regard.

The submissions to, and results of, UK and US judicial proceedings (such as PRO rate court decisions and judicial FRAND rate

determinations) are typically open to public inspection, subject to the issuance of protective orders for specific items of confidential and trade secret information.[dclxii] Likewise, advisory opinions issued in a JPO *Hantei* proceeding are "entirely open to the public", subject to the protection of specific trade secret information.[dclxiii] Judicial proceedings in countries such as Germany and China, however, are less transparent, and only the court's published decisions are made public while the evidence collected and proceedings themselves are not open to the public.[dclxiv]

The EUIPO Competency Centre, as proposed, will publish its expert opinions regarding aggregate FRAND rates.[dclxv] However, with respect to bilateral FRAND rate determinations, the methodology used by the conciliator will be made publicly available, but the actual rate determination will remain confidential.[dclxvi]

As discussed in Part III.C.5, bilateral arbitration is usually conducted in an entirely confidential manner, such that none of the proceedings, reasoning or ultimate decision are made public. This level of confidentiality has been criticized, as noted above, but also appears to be desirable to parties electing to resolve their disputes through arbitration. Stakeholder Engagement.

It is important for the legitimacy of any FRAND rate-setting tribunal to permit participation by all interested stakeholders, whether SEP holders, implementers, regulators, or affected members of the public (represented by civil society organizations). Most of the public rate-setting bodies discussed in this Report are open to public participation and input, including the ICC (Section II.B), the Federal Energy Regulatory Commission (FERC) (Section II.C) and the Copyright Royalty Board (Section II.E). Likewise, openness to all interested participants is a feature of most patent pools (Section V.A.2.d) and a fundamental attribute of voluntary consensus SDOs. Moreover, as noted in Section V.C.1, many SDOs require "balance" among different stakeholder groups on technical committees, and this effort at balance

has been argued by some to be needed with respect to SDO policy decisions as well.[dclxvii] All of these considerations suggest that a FRAND rate-setting tribunal should make efforts to engage all interested stakeholders in its proceedings.

Given the cost (in terms of time as well as financial outlays) of participating in rate-setting activities, the emergence of trade associations representing SMEs could facilitate engagement by these stakeholders in rate-setting proceedings. A rate-setting tribunal could affirmatively encourage participation by such groups.

Timing of Decisions

Rate-setting proceedings involving multiple parties and complex technologies and markets can be extremely time-consuming. The length of proceedings was one of the principal complaints against the UK Performing Rights Tribunal and the later Copyright Tribunal.[dclxviii] In the US, Copyright Rate Board hearings often last for months, after years of briefing and evidence gathering.[dclxix] The typical length of judicial FRAND proceedings has also given rise to criticism.

These lengthy timeframes have led, it appears, to efforts by emerging and proposed bodies to impose shorter timeframes for the determination of FRAND rates and related findings. Thus, the JPO *Hantei* essentiality checking service advises that it features “prompt conclusion (as early as 3 months”).[dclxx] The EUIPO Competency Centre, as proposed, would conclude essentiality checks within 6 months from appointment of the evaluator,[dclxxi] determine aggregate royalty rates within 8 months from the end of the information gathering phase,[dclxxii] and determine FRAND rates within 9 months from submission of the request.[dclxxiii] The proposed Global Rate-Setting Tribunal is envisioned as taking 12 months to determine aggregate rates and allocations among SEP holders.[dclxxiv] Any FRAND rate-setting tribunal should set reasonable timelines for the determination of

FRAND rates, given the amount of stakeholder input and evidence that will be collected.

Discovery and compelled production of evidence

Another important consideration for a rate-setting tribunal is the degree to which evidence may be collected (or compelled) by the tribunal. In judicial proceedings and some agency proceedings, the tribunal may order parties to produce evidence under compulsion of law.

Judicial proceedings in some countries, most notably the US and to a lesser degree the UK (but only under very limited circumstances in countries such as Germany and China), also permit parties to compel each other to produce evidence through the discovery process.[dclxxv] As noted in Section II.D, the US Copyright Royalty Board also allows discovery to a limited degree,[dclxxvi] and may also issue third-party subpoenas to obtain further evidence pertinent to its rate setting.[dclxxvii]

In arbitral proceedings, discovery may be available but can be limited pursuant to contract and the rules of the arbitral tribunal.[dclxxviii] A proposed tribunal's authority to permit discovery, and to require the production of evidence by third parties, should be considered.

As many cases have shown, discovery can be abusive, though it can also provide parties with substantial information not otherwise available from the public record.

Appeal

In most developed countries, the right to appeal a judicial determination of first instance is viewed as "sacrosanct" -- it is a fundamental aspect of the rule of law.[dclxxix] In standardization, too, the ability of participants to appeal technical decisions of a working group or technical committee to a higher authority within an SDO is considered to be a requirement for "due process".[dclxxx] As a result, most governmental rate-setting

procedures, unlike private rate determinations, offer an appeals pathway.

As discussed in note 619, the ability to appeal a governmental rate determination exists when the statutory framework for the rate determination expressly contemplates appeal to higher agency authority or to specified courts. In addition, rate decisions by lower courts (e.g., the PRO rates or interpleader actions) are inherently subject to appeal to higher courts within the same court system. Governmental rate determinations may also be challenged on generally applicable administrative or antitrust law grounds, unless immunity exists under the statutory framework for the rate-setting procedure or is otherwise recognized by law.[dclxxxi]

Rates set through binding arbitration may be challenged only on grounds of bias, contradiction of law and public policy as permitted under the New York Convention,[dclxxxii] though such challenges, at least in the US, are increasingly difficult.[dclxxxiii] The result of such a challenge, if successful, would generally be to have the arbitral result discarded.

Private rate determinations made through collective agreement under the auspices of an SDO generally lack an appeals pathway, though these rate determinations could be challenged in court (or via arbitration, if specified in the relevant SDO policy) on antitrust or competition law grounds.

One of the principal questions that must be answered with respect to any appeals process is the level of deference that the appellate body should give to the determinations of the body whose decision is being appealed. At root, it is a question of statutory interpretation – to what degree should an agency be free to interpret its own statutory mandate, and to what degree should courts second guess that agency's decisions. As Kent Barnett and Lindsay Vinson have noted, there is a "danger of permitting either judicial control or agency

discretion to run riot."[dclxxxiv] This is one of the key issues in administrative law and continues to evolve around the world.[dclxxxv]

In the UK, courts will set aside an agency determination only when it is "so unreasonable that no reasonable authority [after considering appropriate factors] could ever have come to it."[dclxxxvi] Accordingly, UK courts reviewing rate determinations made by the Copyright Royalty Board have generally been deferential to the Board's determinations, so much so that Mr Justice Jacob commented in the *Phonographic Performance* case that "[a]ppeal is … not a very promising road upon which a dissatisfied party can embark."[dclxxxvii] Virtually the only basis for a court's reversal of the Board's determination is "a finding unsupported by any evidence" amounting to an error of law. As the UKIPO noted in its 2007 review of the Board's procedures, "[a] relaxation of the basis for appeal would be likely to lead to a rehearsing of all that had gone before; a dissatisfied party would be seeking a second bite of the cherry, which is not the purpose of appeal."[dclxxxviii] As a result, no change to the grounds for appeal was recommended. Courts in the US have been similarly deferential to agency rate determinations.[dclxxxix]

There are two potential outcomes of a successful rate challenge: the appellate body can set its own rate, or it can remand the determination to the original rate-setting body for recalculation in accordance with the decision of the appellate body. In some cases, such as US PRO rate court appeals to the DC Circuit, the decision which approach to take lies with the appellate body.[dcxc]

Nevertheless, and despite the high stakes involved, the majority of FRAND cases in the US and Europe are not appealed following an initial judicial decision, perhaps because that initial decision strongly drives at least one party toward settlement of the dispute. Specific data on the percentage of determinations that are appealed is not available.

Cost

The cost of creating and maintaining a rate-setting tribunal, whether governmental or private, can be substantial. This cost involves compensation for staff (expert adjudicators, administrators and support personnel), physical facilities for offices and proceedings, information technology, and external advisors.[dcxci]

Some of the procedures associated with FRAND rate-setting, such as checking the essentiality of declared SEPs, could involve substantial additional costs, as described in Section IV.E.2.a (i.e., in the range of US$10,000 per patent),[dcxcii] though proposals have been made to reduce this cost through computerized (AI) analysis of patent claims and sampling of declared SEPs by expert examiners (though each of these approaches has also been the subject of critique).[dcxciii] The JPO *Hantei* essentiality checking service advertises a "low cost" of 40,000 Yen per request[dcxciv] (approximately £216).

In private bilateral arbitration, the direct costs of the proceeding, as well as an overhead charge to cover the indirect costs of the arbitral tribunal, are typically borne by the parties. Each party generally bears its own internal and external costs (e.g., attorneys, experts, etc.). The arbitration agreement may call for fee shifting, requiring the "losing" party to bear both the costs of arbitration as well as the prevailing party's costs.

The costs of private multilateral rate-setting are often spread among the participants. SDOs often charge membership fees that cover their administrative costs, while members bear their own costs of participation. Patent pools typically raise funding from participants to support their initial formation, including recruitment of participants, patent essentiality checks and licensing outreach. The Global Rate-Setting Tribunal proposal contemplates supporting the Tribunal via a small surcharge that SEP holders would impose on each SEP royalty payment.[dcxcv]

Government agencies engaged in rate-setting may also seek to recoup their costs from parties to these proceedings. While these fees generally do not cover the entire cost of maintaining the institution, they may offset some operational costs and, in some cases, may be significant.[dcxcvi] As discussed in Section II.B, the US Interstate Commerce Commission withstood legal challenges to the fees that it imposed on carriers subject to its rate-setting proceedings. This being said, many agencies involved in rate-setting are funded by the public purse and do not seek to recoup their costs from affected parties (e.g., in utility and prescription drug settings).

The recoupment of costs is less common among judicial and quasi-judicial bodies, which may impose modest filing and court fees, but bear the bulk of their internal expenses. This approach can lead to periodic legislative review of the cost justification of such bodies, as occurred in the US during the early 1990s in connection with the Copyright Royalty Tribunal and led to the replacement of that body with a series of *ad hoc* Copyright Arbitration Royalty Panels (which were themselves eventually replaced by the current Copyright Royalty Board).[dcxcvii]

Utilization

It is hard to predict the level of usage that would be made of a FRAND rate-setting body. The activity of rate-setting bodies in other sectors has varied dramatically. At its peak, the US Interstate Commerce Commission had over two thousand employees and adjudicated thousands of tariffs and rate-setting matters.[dcxcviii] Yet other rate-setting bodies have been under-utilized, as occurred with the US Copyright Royalty Tribunal, whose workload was deemed insufficient to justify its continued cost to the government.[dcxcix] In recent years, however, as its jurisdiction has expanded, and it has been charged with review and redetermination of rates in several market segments every four years, the US Copyright Rate Board has heard a significant number of matters (e.g., 21 in 2023).[dcc]

In contrast, since the 2001 amendment to ASCAP's consent decree, there have only been six PRO rate court proceedings in the US.[dcci] Likewise, in the UK, as noted in Section II.F.5, the Copyright Tribunal has only adjudicated ten rate-setting matters between 2014 and 2021, slightly more than one per year. The comparatively low level of utilization of both the US PRO rate courts and the UK Copyright Tribunal is likely due to the fact that these bodies are called upon to set rates only when private parties cannot agree on rates. This is in contrast to the US Copyright Rate Board, which is the rate-setter of first instance with respect to the licenses over which it has jurisdiction, and must thus convene on a regular schedule in order to fulfill its statutory mandate.

VI. CONCLUSION

Rate-setting in a range of industries has been conducted for more than a century through both governmental and private mechanisms. In many cases, these procedures have inured to the benefit of competitors, markets and consumers. While many SDOs require the holders of SEPs to grant licenses on FRAND terms, bilateral negotiation among SEP holders and implementers of standards has not always been smooth, leading to disputes and litigation around the world as well as jurisdictional competition and conflict.

Accordingly, the public interest may be served by the establishment of a structured rate-setting function for aggregate and individual FRAND licensing rates. Crafting the details of such a function, however, is a complex task with multiple interdependent variables and dependencies. As a result, reference to the successes, challenges and failures of rate-setting bodies across a diverse mix of industries and contexts can be helpful in enabling planners to optimize any such function for the benefit of the economy, innovation and consumers. To do so, policy makers should seek the input of all relevant stakeholders in the

industry to be regulated, enact procedures to protect the interests of small entities and new market entrants, and clearly articulate the goals of the rate-setting enterprise.

SELECTED REFERENCES

Altobelli AS, 'GEMA Type Agencies as a Solution for FRAND? Report from the Munich IP Dispute Resolution Forum, Nov. 12, 2019' <https://www.ipdr-forum.org/events/gema-type-frand-agencies/>

Am. Arbitration Assn., *Resolution of Patent Disputes Supplementary Rules* (2006) <https://www.adr.org/sites/default/files/Resolution%20of%20Patent%20Disputes%20Supplementary%20Rules.pdf>

Am. Bar Assn. Sec. of Antitrust Law, *Handbook on Antitrust Aspects of Standard Setting* (2nd edn, ABA Publishing 2011)

Am. Intell. Prop. Law Assn., 'Comments on The Proposal for SEP Regulation Published on April 27, 2023 (Aug. 10, 2023)' <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents/F3434456_en>

Arnold R, 'SEPS, FRAND and Mandatory Global Arbitration' (2021) 2021 GRUR 123

——, 'The EU's WTO Complaint against China Can Only Be Resolved by Establishing Legally Enforceable Global Arbitration of SEP Disputes' (2022) 17 J. Intell. Prop. L. & Practice 329

Barnett JM, 'Has the Academy Led Patent Law Astray?' (2017) 32 Berkeley Tech. L.J. 1527

Barnett KH and Vinson L, 'Chevron Abroad' (2020) 96 Notre Dame Law Review 621

Baron J, 'Making the Rules: The Governance of Standard Development Organizations and Their Policies on Intellectual Property Rights' in

Nikolaus Thumm (ed), *JRC Science for Policy Report, EUR 29655* (2019)

——, 'Empirical Assessment of Potential Challenges in SEP Licensing, Report Commissioned by the Eur. Comm'n Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, GROW/2021/MVP/0010' (Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs 2023) GROW/2021/MVP/0010

——, 'The Commission's Draft SEP Regulation – Focus on Proposed Mechanisms for the Determination of "Reasonable Aggregate Royalties"' [2023] 4iP Council https://www.4ipcouncil.com/application/files/3016/9384/7247/The_Commission_s_Draft_SEP_Regulation_-_Focus_on_Proposed_Mechanisms_for_the_Determination.pdf

——, 'Essentiality Checks for Potential SEPs: A Framework for Assessing the Impact of Different Policy Options' (2023) Eur. Comm'n Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs

Baron J, Contreras JL and Larouche P, 'Balance and Standardization: Implications for Competition and Antitrust Analysis' (2022) 84 Antitrust L.J. 425

Baron J and Pohlmann T, 'Mapping Standards to Patents Using Declarations of Standard-Essential Patents' (2018) 27 J. Econ. & Mgt. Strat. 504

Bartlett JR and Contreras JL, 'Rationalizing FRAND Royalties: Can Interpleader Save the Internet of Things?' (2017) 36 Review of Litigation 285

Bekkers R and others, 'Pilot Study for Essentiality Assessment of Standard Essential Patents' [2020] Report for the Eur. Comm. Joint Res. Centre EUR 30111 EN

——, ‘Overcoming Inefficiencies in Patent Licensing: A Method to Assess Patent Essentiality for Technical Standards’ (2022) 51 Research Pol. 104590

Bekkers R and Updegrove A, ‘IPR Policies and Practices of a Representative Group of Standards-Setting Organizations Worldwide’ <https://rbekkers.ieis.tue.nl/nas/Bekkers_Updegrove_NAS2013_updated_report.pdf>

Biddle B, White A and Woods S, ‘How Many Standards in a Laptop? (And Other Empirical Questions)’, Proceedings of the 2010 Int’l Telecom Union Section of Telecom. Standardization (ITU-T) Kaleidoscope Academic Conference (2010)

Blackman SH and McNeill RM, ‘Alternative Dispute Resolution in Commercial Intellectual Property Disputes’ (1998) 47 American University Law Review 1709

Bonadio E, ‘Countering Criticisms to the Proposed EU SEPs Regulation’ (*Kluwer Patent Blog*, 27 November 2023) <https://patentblog.kluweriplaw.com/2023/11/27/countering-criticisms-to-the-proposed-eu-seps-regulation/>

Born GB, International Commercial Arbitration: Commentary & Materials (2nd edn, 2001)

Boyd W, ‘Just Price, Public Utility, and the Long History of Economic Regulation in America’ (2018) 35 Yale J. Reg. 721

Breyer S, *Regulation and Its Reform* (Harvard Univ Press 1982)

Brito J and Contreras Alvarez HA, ‘Patent Pools: A Practical Perspective—Part I’ (2021) 56 Les Nouvelles 341

——, ‘Patent Pools: A Practical Perspective—Part II’ (2022) 57 Les Nouvelles 39

Cal. Public Util. Comm'n, 'CPUC History & Organizational Structure' (2021) <https://www.cpuc.ca.gov/about-cpuc/divisions/water-division/water-rates-and-general-rate-case-proceedings-section/general-rate-case-process>

Carlton DW and Shampine A, 'An Economic Interpretation of FRAND' (2013) 9 Journal of Competition Law & Economics 531

Carrier MA, Innovation for the 21st Century: Harnessing the Power of Intellectual Property and Antitrust Law (Oxford Univ Press 2009)

Cassler R, 'Copyright Compulsory Licenses - Are They Coming or Going' (1990) 37 J. Copyright Soc'y U.S.A. 231

Centers for Medicare & Medicaid Services, 'Medicare Drug Price Negotiation Program: Revised Guidance, Implementation of Sections 1191-1198 of the Social Security Act for Initial Price Applicability Year 2026 (Jun. 30, 2023)' <https://www.cms.gov/files/document/revised-medicare-drug-price-negotiation-program-guidance-june-2023.pdf>

——, 'Fact Sheet: Key Information on the Process for First Round of Negotiations for the Medicare Drug Price Negotiation Program (Sep. 2023)' <https://www.cms.gov/files/document/fact-sheet-negotiation-process-flow.pdf>

——, 'Medicare Drug Price Negotiation Program Patient-Focused Listening Sessions (Dec. 6, 2023)' <https://www.cms.gov/inflation-reduction-act-and-medicare/medicare-drug-price-negotiation-program-patient-focused-listening-sessions>

——, 'Medicare Drug Price Negotiation Program: Manufacturer Agreements for the Selected Drugs for Initial Price Applicability Year 2026 (Oct. 3, 2023)' <https://www.cms.gov/files/document/fact-sheet-manufacturer-agreements-selected-drugs-ipay-2026.pdf>

Chafee, Jr. Z, 'Modernizing Interpleader' (1921) 30 Yale L.J. 814

——, ‘Interpleader in the United States Courts’ (1931) 41 Yale L.J. 1134

——, ‘The Federal Interpleader Act of 1936’ (1936) 45 Yale L.J. 963

Chalkidou K, ‘Comparative Effectiveness Review Within the U.K.’s National Institute for Health and Clinical Excellence’ <https://www.commonwealthfund.org/sites/default/files/documents/___media_files_publications_issue_brief_2009_jul_chalkidou_1296_chalkidou_uk_cer_issue_brief_717.pdf>

Chien CV and Schulman E, ‘Patent Semi-Comparables’ (2018) 25 Tex. Intell. Prop. L.J. 215

Clark B and Puthiyah MS, ‘Can State Prescription Drug Affordability Boards Address High-Cost Drug Prices?’ (Commonwealth Fund 2022) <https://www.commonwealthfund.org/blog/2022/can-state-prescription-drug-affordability-boards-address-high-cost-drug-prices>

Cocera AT, ‘Letter to Karl Heinz Rosenbrock, Director General ETSI, June 21, 2006’

Cohen M, ‘Oppo v. Nokia in Context’ (*China IPR*, 18 December 2023) <https://chinaipr.com/2023/12/18/oppo-v-nokia-in-context/>

Colvin AJS, ‘The Metastisization of Mandatory Arbitration’ (2019) 94 Chicago-Kent Law Review 3

Contreras JL, ‘Rethinking RAND: SDO-Based Approaches to Patent Licensing Commitments’ [2012] ITU Patent Roundtable, Geneva <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2159749>

——, ‘Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing’ (2013) 79 Antitrust L.J. 47

——, ‘Technical Standards and Ex Ante Disclosure: Results and Analysis of an Empirical Study’ (2013) 53 Jurimetrics 163

——, ‘A Brief History of FRAND: Analyzing Current Debates in Standard-Setting and Antitrust through a Historical Lens’ (2015) 80 Antitrust L.J. 39

——, ‘Patent Pledges’ (2015) 47 Arizona St. L.J. 543

——, ‘When a Stranger Calls: Standards Outsiders and Unencumbered Patents’ (2016) 12 J. Comp. L. & Econ. 507

——, ‘Aggregated Royalties for Top-Down FRAND Determinations: Revisiting “Joint Negotiation”’ (2017) 62 Antitrust Bull. 690

——, ‘Essentiality and Standards-Essential Patents’ in Jorge L Contreras (ed), *Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents* (Cambridge Univ Press 2017)

——, ‘From Private Ordering to Public Law: The Legal Framework Governing Standards-Essential Patents’ (2017) 30 Harv. J. L. & Tech. 211

——, ‘Global Rate-Setting: A Solution for Standards Essential Patents?’ (2019) 94 Wash. L. Rev. 701

——, ‘Much Ado About Holdup’ (2019) 2019 U. Ill. L. Rev. 875

——, ‘Technical Standards, Standards-Setting Organizations and Intellectual Property: A Survey of the Literature (With an Emphasis on Empirical Approaches)’ in Peter S Menell and David L Schwartz (eds), *Research Handbook on the Economics of Intellectual Property Law, Vol. II – Analytical Methods* (Edward Elgar 2019)

——, ‘Sometimes FRAND Does Mean License-to-All’ [2020] Intell. Asset Mgt. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3889813>

——, ‘Anti-Suit Injunctions and Jurisdictional Competition In Global FRAND Litigation: The Case For Judicial Restraint’ (2021) 11 NYU J. Intell. Prop. & Ent. L. 171

——, ‘A Framework for Evaluating Willingness of FRAND Licensees’ [2021] Law360

——, Intellectual Property Licensing and Transactions: Theory and Practice (Cambridge Univ Press 2022)

——, ‘National FRAND Rate-Setting Legislation: A Cure For International Jurisdictional Competition In Standards-Essential Patent Litigation?’ [2022] CPI Antitrust Chronicle

——, ‘The European Commission’s Proposed SEP Regulation – A Missed Opportunity for Meaningful Reform?’ (2023) 2023 CPI TechREG Chronicle 1

——, ‘The Effect of FRAND Commitments on Patent Remedies’ in C Bradford Biddle and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019)

——, ‘Preserving the Royalty-Free Standards Ecosystem’ (2023) 45 Eur. Intell. Prop. Rev. 371

Contreras JL and Gilbert RJ, ‘A Unified Framework for RAND and Other Reasonable Royalties’ (2015) 30 Berkeley Tech. L.J. 1447

——, ‘Non-Discrimination: FRAND’s Last Stand?’ [2020] CPI Antitrust Chron. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3753827>

Contreras JL and Newman D, ‘Developing a Framework for Arbitrating Standards-Essential Patent Disputes’ (2014) 2014 J. Dispute Resol. 23

Cotter TF, ‘Patent Damages Heuristics’ (2018) 25 Tex. Intell. Prop. L.J. 159

——, ‘Reasonable Royalties’ in C Bradford Biddle and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019)

Crane DA, ‘Bargaining in the Shadow of Rate-Setting Courts’ (2009) 76 Antitrust L.J. 307

Cremers K and others, ‘Patent Litigation in Europe’ (2016) 44 European Journal of Law & Economics 1

Czapracka K, Intellectual Property and the Limits of Antitrust: A Comparative Study of US and EU Approaches (Edward Elgar 2009)

Dalton HL, ‘Taking the Right to Appeal (More or Less) Seriously’ (1985) 95 Yale Law Journal 62

de Werra J, ‘Global Policies for Arbitrating Intellectual Property Disputes’ in Jacques de Werra (ed), *Research Handbook on Intellectual Property Licensing* (2013)

Delrahim M, ‘Take It to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law – Remarks as Prepared for Delivery at the USC Gould School of Law’ <https://www.justice.gov/opa/speech/file/1010746/download>

Dempsey PS, ‘The Rise and Fall of the Interstate Commerce Commission: The Tortuous Path from Regulation to Deregulation of America’s Infrastructure’ (2012) 95 Marquette Law Review 1151

Dhenne M, ‘Calculation of FRAND Royalties: An Overview of Practices Around the World’ (2019) 41 Eur. Intell. Prop. Rev. 754

DiCola P, ‘Copyright Equality: Free Speech, Efficiency, and Regulatory Parity in Distribution’ (2013) 93 B.U. L. Rev. 1837

Drahozal CR and Ware SJ, ‘Why Do Businesses Use (or Not Use) Arbitration Clauses’ (2010) 25 Ohio St. J. Dispute Resolution 433

DVB Project, ‘Memorandum of Understanding Further Amended and Restated for the Development of Harmonized Digital Video Broadcasting (DVB) Services Based on European Specifications (3

Jan. 2014)' <https://dvb.org/wp-content/uploads/2019/12/dvb_mou.pdf>

Eltzroth C, 'Arbitration of Intellectual Property Disputes' (2014) 19 Arbitration News 88

Epstein RA, 'The History of Public Utility Rate Regulation in the United States Supreme Court: Of Reasonable and Nondiscriminatory Rates' (2013) 38 J. Supreme Court Hist. 345

Eur. Comm'n, Patents and Standards: A Modern Framework for IPR-Based Standardization (2014)

——, 'Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Technology Transfer Agreements, 2014 O.J. (C 89/03)'

——, 'Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee: Setting out the EU Approach to Standard Essential Patents. COM(2017) 712' <https://ec.europa.eu/docsroom/documents/26583>

——, 'Commission Staff Working Document Impact Assessment Report Accompanying the Document Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU) 2017/1001 (SWD(2023 124 Final) (Apr. 27, 2023)'

——, 'Proposal for a Regulation of The European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU)2017/1001, COM(2023) 232 (Apr. 27, 2023)'

European Patent Institute, 'Comments on the Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU)2017/1001, 27th April 2023'

Fakler P, ‘Music Copyright Royalty Rate-Setting Litigation: Practice Before the Copyright Royalty Board and How It Differs from ASCAP and BMI Rate Court Litigation’ (2013) 33 Licensing J. 9

Farrell J and others, ‘Standard Setting, Patents, and Hold-Up’ (2007) 74 Antitrust L.J. 603

Foer AA and Vaheesan S, ‘Request for Joint Enforcement Guidelines on the Patent Policies of Standard Setting Organizations: Petition to the Department of Justice and Federal Trade Commission (May 23, 2013)’ <https://www.antitrustinstitute.org/wp-content/uploads/2013/05/Request-for-Joint-Enforcement-Guidelines-on-the-Patent-Policies-of-Standard-Setting-Organizations.pdf>

Frain T, ‘Patents in Standards & Interoperability’ (World Intellectual Property Organization, 29 November 2006) <https://www.wipo.int/export/sites/www/meetings/en/2006/patent_colloquia/11/pdf/frain_paper.pdf>

Freas H, ‘Ratemaking Powers of the Interstate Commerce Commission’ (1962) 31 George Washington Law Review 54

Friedl G and Ann C, ‘A Cost-Based Approach for Calculating Royalties for Standard-Essential Patents (SEPs)’ (2018) 21 Journal of World Intellectual Property 369

Galetovic A and Gupta K, ‘The Case of the Missing Royalty Stacking in the World Mobile Wireless Industry’ (2020) 29 Indus. & Corporate Change 827

Galetovic A, Haber S and Zaretski L, ‘An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results"’ (2018) 42 Telecommunications Policy 263

Galli N and others, ‘Robert Schuman Centre Working Paper: Position Statement on the European Commission’s Proposal for a SEPs Regulation (RSC 2023/51)’

Garcia KA, ‘Facilitating Competition by Remedial Regulation’ (2016) 31 Berkeley Tech. L.J. 183

——, ‘Copyright Arbitrage’ (2019) 107 California Law Review 199

Geradin D, ‘FRAND Arbitration: The Determination of Fair, Reasonable and Non-Discriminatory Rates for SEPs by Arbitral Tribunals’ [2016] CPI Antitrust Chron.

Gilbert RJ, ‘Ties That Bind: Policies to Promote (Good) Patent Pools’ (2010) 77 Antitrust L.J. 1

——, ‘Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations’ (2011) 77 Antitrust L.J. 855

Greenbaum E, ‘Forgetting FRAND: The WIPO Model Submission Agreements’ (2015) 50 Les Nouvelles 81

Group of Experts on Licensing and Valuation of Standard Essential Patents (E03600), *Contribution to the Debate on SEPs* (2021) <https://ec.europa.eu/docsroom/documents/45217>

Halpern MS, International Intellectual Property Arbitration Through the Lens of FRAND (Full Court Press 2023)

Harkness TP and others, Discovery in International Civil Litigation: A Guide for Judges (Federal Judicial Center 2015)

Heiden B, ‘Competing Value Logics in the Apportionment of SEP Damages: A Comparison of FRAND Royalty Methodologies in U.S. Courts 2013-15’ in Kai Jakobs (ed), *Corporate and Global Standardization Initiatives in Contemporary Society* (IGI Global 2018)

Henkel J and Meghame T, ‘IP Shares: A Means to Simplify Licensing of Standard Essential Patents’ [2023] Intell. Asset Mgt.

Henkel J and Zischka H, ‘How Many Patents Are Truly Valid? Extent, Causes, and Remedies for Latent Patent Invalidity’ (2019) 48 European Journal of Law & Economics 195

Herman M, ‘Letter to Kathi Vidal, Director of US Patent & Trademark Off. Re. Joint ITA-NIST-USPTO Collaboration Initiative Regarding Standards (Docket No. PTO–T–2023–0034) (Nov. 6, 2023)’

Herman MK, ‘How the Deal Is Done, Part 1’ [2010] Landslide 35

Hesse RB, ‘Remarks at the ITU-T Patent Roundtable: Six “Small” Proposals for SSOs Before Lunch (Oct. 10, 2012)’ (10 October 2012) <https://www.justice.gov/d9/atr/speeches/attachments/2015/06/25/287855.pdf>

Husovec M, ‘A Human Right to Ever-Stronger Protection?’ (2023) 54 International Review of Intellectual Property and Competition Law 1483

Hwang C and Edwards BP, ‘The Value of Uncertainty’ (2015) 110 Nw. U. L. Rev. 283

Japan Patent Office, Guide to Licensing Negotiations Involving Standard Essential Patents (2018)

——, ‘Manual of “Hantei” (Advisory Opinion) for Essentiality Check (Rev. Ed. Jun. 2019)’ <https://www.jpo.go.jp/e/system/trial_appeal/document/hantei_hyojun/manual-of-hantei.pdf>

——, ‘Guide to Hantei (Advisory Opinion) System (Ref. Dec. 2020)’

Jerman RE and Anderson RD, ‘Regulatory Issues: Shipper Versus Motor Carrier’ (1994) 33 Transportation Journal 15

Kappos DJ and Michel PR, ‘The Smallest Salable Patent-Practicing Unit: Observations on Its Origins, Development, and Future’ (2017) 32 Berkeley Tech. L.J. 1433

Karim MA, 'The Proposed EU SEP Regulation: Checking Balancing Incentives, and Compatibility with EU Fundamental Rights, and the TRIPS Regime' [2023] 4iP Council <https://www.4ipcouncil.com/application/files/9816/8847/8735/2023.07.04_final_Draft_SEP_Regulation_paper_.pdf>

Kim Y, 'Lifting Confidentiality of FRAND Royalties in SEP Arbitration' (2014) 16 Col. Sci. & Tech. L. Rev. 1

Kintner EW and others, *Federal Antitrust Law*, vol 9 (Matthew Bender & Company, Inc 2023)

Korzun V, 'Arbitrating Antitrust Claims: From Suspicion to Trust' (2016) 48 NYU Journal of International Law & Politics 867

Kühn K-U, Scott Morton F and Shelanski H, 'Standard Setting Organizations Can Help Solve the Standard Essential Patent Licensing Problem' (2013) 3 CPI Antitrust Chron. 1

Labgold M and Labgold M, 'Should I Arbitrate My Patent Dispute?' (*Kluwer Arbitration Blog*, 29 November 2022) <https://arbitrationblog.kluwerarbitration.com/2022/11/29/should-i-arbitrate-my-patent-dispute/?output=pdf>

Larouche P, Padilla J and Taffet RS, 'Settling FRAND Disputes: Is Mandatory Arbitration a Reasonable and Nondiscriminatory Alternative?' (2014) 10 J. Comp. L. & Econ. 581

Lauriat B, 'FRAND Arbitration Will Destroy FRAND' (2023 forthcoming) 30 Michigan Technology Law Review

Layne-Farrar A and Lerner J, 'To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules' (2011) 29 Int'l J. Indus. Org. 294

Layne-Farrar A, Llobet G and Padilla AJ, ‘Preventing Patent Hold Up: An Economic Assessment of Ex Ante Licensing Negotiations in Standard Setting’ (2009) 37 AIPLA Q. J. 445

Layne-Farrar A and Wong-Ervin KW, ‘Methodologies for Calculating FRAND Damages: An Economic and Comparative Analysis of the Case Law from China, the European Union, India, and the United States’ (2017) 8 Jindal Global L. Rev. 127

Lemley MA, ‘Intellectual Property Rights and Standard-Setting Organizations’ (2002) 90 Cal. L. Rev. 1989

——, ‘Ten Things to Do About Patent Holdup of Standards (and One Not To)’ (2007) 48 B.C. L. Rev. 149

Lemley MA and Shapiro C, ‘Patent Hold-Up and Royalty Stacking’ (2007) 85 Tex. L. Rev. 1991

——, ‘A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents’ (2013) 28 Berkeley Tech. L.J. 1135

Lemley MA and Simcoe T, ‘How Essential Are Standard-Essential Patents?’ (2019) 104 Cornell L. Rev. 607

Lerner J and Tirole J, ‘Standard-Essential Patents’ (2015) 123 J. Political Econ. 547

‘Letter from Charles A. James, Assistant Attorney General, U.S. Dept. of Justice to Ky P. Ewing, Vinson & Elkins (Nov. 12, 2002) (3GPP Letter)’

‘Letter from Joel I. Klein, Acting Assistant Att’y Gen., U.S. Dep’t of Justice, Antitrust Div., to Gerrard [Sic] R. Beeney, Esq., Sullivan & Cromwell (June 26, 1997) (MPEG-2 Letter)’

‘Letter from Joel I. Klein, Assistant Att’y Gen., U.S. Dep’t of Justice, Antitrust Div., to Garrard R. Beeney, Esq., Sullivan & Cromwell (Dec. 16, 1998) (DVD 3C Letter)’

‘Letter from Joel L. Klein, Assistant Attorney General, U.S. Dept. of Justice, to Carey R. Ramos, Esq., Paul, Weiss, Rifkind, Wharton & Garrison (Jun. 10, 1999) (DVD 6C Letter)’

‘Letter from Makan Delrahim, Assistant Attorney General, U.S. Dept. Justice Antitrust Div., to Mark H. Hamer, Baker & McKenzie, Dated July 28, 2020’

‘Letter from Makan Delrahim, Asst. Atty. Gen., U.S. Dept. Justice, to Mark H. Hamer, Baker & McKenzie (Jul. 28, 2020) (Avanci Letter)’

‘Letter from Renata B. Hesse, Acting Assistant Att’y Gen., U.S. Dep’t of Justice, Antitrust Div., to Michael A. Lindsay (Feb. 2, 2015) (IEEE Letter 2)’

‘Letter from Thomas O. Barnett, Assistant Attorney General, to Robert A. Skitol, Esq., Dated Oct. 30, 2006’

‘Letter from Thomas O. Barnett, Assistant Attorney General, U.S. Dept. of Justice to Michael A. Lindsay, Partner, Dorsey & Whitney LLP (Apr. 30, 2007) (IEEE Letter)’

Li R and Contreras A, ‘Are Collecting Agencies a Model That Fits to SEP Licensing?’ (2021) 16 Journal of Intellectual Property Law & Practice 1109

Lindsay MA and Karachalios K, ‘Updating a Patent Policy: The IEEE Experience’ [2015] CPI Antitrust Chronicle 1

Lo Bue M, ‘Are These Cartels? Price Guidelines Adopted by Standard Setting Organisations (US, Institute of Electrical and Electronics Engineers)’ (2016) 7 Journal of European Competition Law & Practice 537

Love BJ and Helmers C, ‘Are Market Prices for Patent Licenses Observable? Evidence from 4G and 5G Licensing’ (2022) 24 Col. Sci. & Tech. L. Rev. 55

Majoras DP, 'Recognizing the Procompetitive Potential of Royalty Discussions in Standard Setting' (Standardization and the Law: Developing the Golden Mean for Global Trade, Stanford Law School, 23 September 2005)

Mallinson K, 'Don't Fix What Isn't Broken: The Extraordinary Record of Innovation and Success in the Cellular Industry under Exiting Licensing Practices' (2016) 23 Geo. Mason L. Rev. 967

——, 'Discovering or Setting Aggregate Royalties and FRAND Rates For SEP Portfolios' (2024) 19 Journal of Law, Economics & Policy 1

Maryland Prescription Drug Affordability Bd., 'About the Board' <https://pdab.maryland.gov/AboutUs.html> accessed 12 November 2023

Masur JS, 'The Use and Misuse of Patent Licenses' (2015) 110 Nw. U. L. Rev. 115

McDonagh L and Bonadio E, 'Standard Essential Patents and the Internet of Things - In-Depth Analysis' (European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs 2019) PE 608.854 <https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2019)608854>

Merges RP, 'Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations' (1996) 84 Cal. L. Rev. 1293

Merges RP and Mattioli M, 'Measuring the Costs and Benefits of Patent Pools' (2017) 78 Ohio St. L.J. 281

Nat'l Acad. for State Health Pol'y, 'States Take Diverse Approaches to Drug Affordability Boards (Feb. 12, 2021)' <https://nashp.org/states-take-diverse-approaches-to-drug-affordability-boards/>

——, ‘Comparison of State Prescription Drug Affordability Review Initiatives (Mar. 31, 2022)’ <https://nashp.org/comparison-of-state-prescription-drug-affordability-review-initiatives/>

Nikolic I, ‘Licensing Negotiation Groups For SEPs: Collusive Technology Buyers Arrangements? Their Pitfalls And Reasonable Alternatives’ (2021) 56 Les Nouvelles 350

Noti-Victor J, ‘Copyright’s Law of Dissemination’ (2023) 44 Cardozo L. Rev. 1769

Ohana G, Hansen M and Shah O, ‘Disclosure and Negotiation of Licensing Terms Prior to Adoption of Industry Standards: Preventing Another Patent Ambush?’ (2003) 24 Eur. Competition L. Rev. 644

Oregon Prescription Drug Affordability Bd., ‘Board Calendar and Materials’ <https://dfr.oregon.gov/pdab/Pages/board-calendar.aspx> accessed 12 November 2023

——, ‘Frequently Asked Questions (FAQs)’ <https://dfr.oregon.gov/pdab/Pages/pdab-faqs.aspx> accessed 12 November 2023

Patterson MR, ‘Confidentiality in Patent Dispute Resolution: Antitrust Implications’ (2018) 93 Wash. L. Rev. 827

Pentheroudakis C and Baron J, ‘Licensing Terms of Standard Essential Patents. A Comprehensive Analysis of Cases’ [2017] JRC Science for Policy Report. EUR 28302

Peters R, Hoffman F and Thumm N, ‘How to Create a Smoother SEP Licensing Ecosystem for IoT’ in Jonathan M Barnett and Sean M O’Connor (eds), *5G and beyond: Intellectual property and competition policy in the internet of things* (Cambridge Univ Press 2024)

Peters R, Nikolic I and Heiden B, ‘Designing SEP Licensing Negotiation Groups to Reduce Patent Holdout in 5G/IoT Markets’ in

Jonathan M Barnett and Sean M O'Connor (eds), *5G and beyond: Intellectual property and competition policy in the internet of things* (Cambridge Univ Press 2024)

Petit N, 'The IEEE-SA Revised Patent Policy and Its Definition of "Reasonable" Rates: A Transatlantic Antitrust Divide?' (2017) 27 Fordham Intellectual Property, Media and Entertainment Law Journal 210

Picht P, 'Arbitration in SEP/FRAND Disputes' in Kolpschinski and McGuire (eds), *Research Handbook on Intellectual Property Rights and Arbitration* (Edward Elgar 2023)

Picht PG, 'Draft SEP Regulation – Coherence Issues, V.2, 7 October 2023'

Pohlmann T and Blind K, 'Landscaping Study on Standard Essential Patents (SEPs), Commissioned by DG GROW Unit F.5' (Eur Comm 2016)

Popper AF, 'Collective Ratemaking: A Case Analysis of the Eastern Central Region and an Hypothesis for Analysing Competitive Structure' (1978) 10 Transportation Law Journal 365

——, 'In Defense of Antitrust Immunity for Collective Ratemaking: Life After the ICC Termination Act of 1995' (1996) 35 Transportation Journal 26

Régibeau P, De Coninck R and Zenger H, 'Transparency, Predictability, and Efficiency of SSO-Based Standardization and SEP Licensing A Report for the European Commission' (Eur Comm 2016)

Rogers RV, 'Historical Origins of Interpleader' (1941) 51 Yale L.J. 924

Rt Hon Lady Rose of Colmworth DBE, 'When Government Sets Prices: What Can History Teach Us? The 23rd Burrell Lecture, Competition Law Assn., Nov. 28, 2022'

Rysman M and Simcoe T, ‘A NAASTy Alternative to RAND Pricing Commitments’ (2011) 35 Telecommunications Policy 1010

Seaman CB, ‘Presumption of Validity’ in Peter S Menell and David L Schwartz (eds), *Research Handbook on the Economics of Intellectual Property Law, Vol. II – Analytical Methods* (Edward Elgar 2019)

——, ‘Lost Profits and Disgorgement’ in Biddle, C. Bradford and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019)

Shelanski HA, ‘The Case for Rebalancing Antitrust Regulation’ (2011) 109 Michigan Law Review 683

Sidak JG, ‘Patent Holdup and Oligopsonistic Collusion in Standard-Setting Organizations’ (2009) 5 J. Comp. L. & Econ. 123

——, ‘The Meaning of FRAND, Part I: Royalties’ (2013) 9 Journal of Competition Law & Economics 931

——, ‘Mandating Final-Offer Arbitration of FRAND Royalties for Standard-Essential Patents’ (2014) 18 Stan. Tech. L. Rev. 1

——, ‘The Proper Royalty Base for Patent Damages’ (2014) 10 J. Comp. L. & Econ. 989

——, ‘Apportionment, FRAND Royalties, and Comparable Licenses After Ericsson v. D-Link’ (2016) 2016 University of Illinois Law Review 1809

——, ‘Using Regression Analysis of Observed Licenses to Calculate a Reasonable Royalty for Patent Infringement’ (2017) 2 Criterion J. Innovation 501

——, ‘Judge Selna’s Errors in TCL v. Ericsson Concerning Apportionment, Nondiscrimination, and Royalties Under the FRAND Contract’ (2019) 4 Criterion J. Innovation 101

Sidak JG and Skog JO, ‘Hedonic Prices and Patent Royalties’ (2017) 2 Criterion J. Innovation 601

Siebrasse NV, ‘Holdup, Holdout, and Royalty Stacking: A Review of the Literature’ in Biddle, C. Bradford and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019)

Siebrasse NV and Cotter TF, ‘Judicially Determined FRAND Royalties’ in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents* (Cambridge Univ Press 2017)

——, ‘The Value of the Standard’ (2017) 101 Minnesota Law Review 1159

Skitol RA, ‘Concerted Buying Power: Its Potential For Addressing The Patent Holdup Problem in Standard Setting’ (2005) 72 Antitrust L.J. 727

Spulber DF, ‘Patent Licensing and Bargaining with Innovative Complements and Substitutes’ (2016) 70 Research in Economics 693

——, ‘Finding Reasonable Royalty Damages: A Contract Approach to Patent Infringement’ (2019) 2019 University of Illinois Law Review 615

Stasik E, ‘Royalty Sharing in SEP Patent Pools – How the Sausage Gets Made’ (*Intell. Asset Mgt.*, 22 November 2023)

Stern RH, ‘Who Should Own the Benefits of Standardization and the Value It Creates?’ (2018) 19 Minnesota Journal of Law, Science & Technology 107

Stevenson T, Mathews N and Pijils P, ‘US Courts Should Adjudicate FRAND Rates On A Global Basis’ (*Law360*, 3 December 2020) <https://www.law360.com/articles/1332630/us-courts-should-adjudicate-frand-rates-on-a-global-basis>

Stone RD and Landry M, ‘Sunsetting the ICC: Is It Really Dead?’ (2004) 22 Essays in Economic and Business History 213

Strickler DR, ‘Royalty Rate Setting for Sound Recordings by the United States Copyright Royalty Board: The Judicial Need for Independent Scholarly Economic Analysis’ (2015) 12 Rev. Econ. Res. on Copyright Issues 1

Syrett TD, ‘US Courts Have Limited Ability To Set FRAND Rates Globally’ (*Law360*, 22 January 2021) <https://www.law360.com/articles/1347298/us-courts-have-limited-ability-to-set-frand-rates-globally>

Tapia C, Industrial Property Rights, Technical Standards and Licensing Practices (FRAND) in the Telecommunications Industry (C Heymanns 2010)

Taylor DO, ‘Using Reasonable Royalties to Value Patented Technology’ (2014) 49 Georgia L. Rev. 79

Teece DJ, ‘Patent Counting and the “Top-Down” Approach to Patent Valuations: An Economic and Public Policy Appraisal of Reasonable Royalties’ (2020) 5 Criterion J. Innovation 157

Tsilkas H, ‘Emerging Patterns in the Judicial Determination of FRAND Rates: Comparable Agreements and the Top-Down Approach for FRAND Royalties Determination’ (2020) 69 GRUR Intl. 885

UK Competition & Markets Authority, ‘Guidance on the Application of the Chapter I Prohibition in the Competition Act 1998 to Horizontal Agreements (CMA184, Aug 2023)’

UK Copyright Tribunal, ‘The Copyright Tribunal Rules 2010 (Statutory Instruments 2010 No. 791)’

——, ‘Copyright Tribunal: Hearing Procedure and Listed Cases (Updated 18 Jul. 2019)’ <https://www.gov.uk/guidance/copyright-tribunal-hearing-procedure-and-listed-cases>

UK Dep’t of Health & Soc. Care, ‘The 2019 Voluntary Scheme for Branded Medicines Pricing and Access (Dec. 2018)’

UK House of Commons, Innovation, Universities & Skills Committee, ‘The Work and Operation of the Copyright Tribunal: Second Report of Session 2007–08 (Mar. 2008)’

UK Intell. Prop. Off., ‘Review of the Copyright Tribunal (2007)’

U.S. Dept. Health & Human Servs., ‘Biden-Harris Administration Moves Forward with Medicare Drug Price Negotiations to Lower Prescription Drug Costs for People with Medicare (Oct. 3, 2023)’ <https://www.hhs.gov/about/news/2023/10/03/biden-harris-administration-moves-medicare-drug-price-negotiations-lower-prescription-drug-costs-people-medicare.html>

——, ‘Inflation Reduction Act Research Series: Trends in Utilization and Spending for Drugs Selected Under Medicare Drug Price Negotiation Program (Aug. 29, 2023)’ <https://aspe.hhs.gov/reports/ira-research-series-medicare-drug-price-negotiation-program>

U.S. Dept. Justice and Federal Trade Comm’n, Antitrust Enforcement and Intellectual Property Rights: Innovation and Competition (2007)

U.S. Dept. Justice and U.S. Federal Trade Comm’n, ‘Antitrust Guidelines for the Licensing of Intellectual Property’ (2017)

U.S. Federal Trade Comm’n, The Evolving IP Marketplace: Aligning Patent Notice and Remedies With Competition (2011)

Vary RAH, ‘Arbitration of FRAND Disputes in SEP Licensing’ in John VH Pierce and Pierre-Yves Gunter (eds), *The Guide to IP Arbitration* (Global Arbitration Rev 2021)

Victor J, ‘Reconceptualizing Compulsory Copyright Licenses’ (2020) 72 Stan. L. Rev. 915

World Intell. Prop. Org., *WIPO ADR Options for FRAND Dispute Management and Resolution* (2022) <https://www.wipo.int/export/sites/www/amc/en/docs/2022/wipo_adr_options_for_frand_disputes_management_resolution.pdf>

Wu T, ‘Copyright’s Communications Policy’ (2004) 103 Michigan Law Review 278

Zaharoff ZN, ‘Sending an S.O.S. to the World: How Foreign Benchmarks Could Improve Accuracy in Webcaster Rate Proceedings’ (2017) 6 Berkeley Journal of Entertainment and Sports Law 79

Zingales N and Kanevskaia O, ‘The IEEE-SA Patent Policy Update under the Lens of EU Competition Law’ (2016) 12 European Competition Journal 195

Allied Tube & Conduit Corp v Indian Head, Inc (1988) 486 US 492 (US)

Apple Inc v Motorola, Inc (2014) 757 F 3d 1286 (Fed Cir)

Commonwealth Scientific & Industrial Research Organisation v Cisco Systems, Inc (CSIRO) (2015) 809 F3d 1295 (Fed Cir)

Eastern Railroad Presidents Conference, et al v Noerr Motor Freight, Inc (1960) U.S. 365 127 (US)

Ericsson, Inc v D-Link Sys, Inc (2014) 773 F3d 1201 (Fed Cir)

FTC v Qualcomm Inc (2019) 411 F Supp 3d 658 (ND Cal)

Georgia-Pacific Corp v US Plywood Corp (1970) 318 F Supp 1116 (SDNY)

In re Innovatio IP Ventures, LLC (2013) 2013 US Dist LEXIS 144061 (ND Ill)

In re Union Oil Co of California (UNOCAL) (2004) 138 FTC 1 (Fed Trade Comm'n)

Loper Bright Enterprises v. Raimondo, 603 U.S. 369 (2024)

Microsoft Corp v Motorola, Inc [2013] WD Wash C10-1823JLR, 2013 US Dist LEXIS 60233

Microsoft Corp v Motorola, Inc (2014) 795 F3d 1024 (9th Cir)

Optis Cellular Tech LLC v Apple Retail UK Ltd (2023) 2023 EWHC 1095 (EWHC (Ch))

Parker v Brown (1943) 371 US 341 (US)

TCL Commun Tech Holdings Ltd v Telefonaktiebolaget LM Ericsson (2019) 943 F3d 1360 (Fed Cir)

Unwired Planet Intl Ltd v Huawei Techs (UK) Co Ltd (2017) [2017] EWHC (Pat) 711

[i] The term SDO is often used interchangeably with the term SSO (standard setting organization). For purposes of this Report, these terms are treated as synonymous.

[ii] UK Competition & Markets Authority, 'Guidance on the Application of the Chapter I Prohibition in the Competition Act 1998 to Horizontal Agreements (CMA184, Aug 2023)', ¶ 9.4.

[iii] *See, e.g.*, Justus Baron and Tim Pohlmann, 'Mapping Standards to Patents Using Declarations of Standard-Essential Patents' (2018) 27 J. Econ. & Mgt. Strat. 504, 521, tbl. 7.

[iv] There is a long-running debate regarding the occurrence of hold-up on an individual or systemic basis and the impact, if any, of hold-up on standardization and markets for standardized products. *See* Norman V Siebrasse, 'Holdup, Holdout, and Royalty Stacking: A Review of the Literature' in Biddle, C. Bradford and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019).; Jorge L Contreras, 'Much Ado About Holdup' (2019) 2019 U. Ill. L. Rev. 875. A full discussion of this topic is beyond the scope of this Report.

[v] Jorge L Contreras, 'A Brief History of FRAND: Analyzing Current Debates in Standard-Setting and Antitrust through a Historical Lens' (2015) 80 Antitrust L.J. 39, 43-44.

[vi] SDOs that require the licensing of SEPs on a royalty-free (RF) basis are also important to the standardization ecosystem. See Jorge L Contreras and others, 'Preserving the Royalty-Free Standards Ecosystem' (2023) 45 Eur. Intell. Prop. Rev. 371. A discussion of RF licensing policies is beyond the scope of this Report. SDOs that require royalty-free licensing of SEPs generally also require that non-royalty terms be fair, reasonable and non-discriminatory. However, for the sake of simplicity, this Report uses the term FRAND

license to refer to royalty-bearing licenses with royalty rates that are FRAND.

[vii] U.S. Dept. Justice and Federal Trade Comm'n, Antitrust Enforcement and Intellectual Property Rights: Innovation and Competition (2007).

[viii] Following customary practice, this Report treats the terms FRAND and RAND (reasonable and nondiscriminatory) as synonymous. *See Microsoft Corp v Motorola, Inc* (2014) 795 F3d 1024 (9th Cir), 1031 n. 2 ("FRAND and RAND have the same meaning in the world of SEP licensing").

[ix] See Contreras, 'Brief History of FRAND' (n 5), 49-73.

[x] See U.S. Dept. Justice and Federal Trade Comm'n (n 7), 46-47; Eur. Comm'n, 'Proposal for a Regulation of The European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU)2017/1001, COM(2023) 232 (Apr. 27, 2023)', 3.

[xi] Agreement on Technical Barriers to Trade, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1, W.S. Hein 2003.

[xii] See Baron and Pohlmann (n 3), 521 tbl. 7; Rudi Bekkers and Andrew Updegrove, 'IPR Policies and Practices of a Representative Group of Standards-Setting Organizations Worldwide' <https://rbekkers.ieis.tue.nl/nas/Bekkers_Updegrove_NAS2013_updated_report.pdf>., 89 tbl. 13; Brad Biddle, Andrew White and Sean Woods, 'How Many Standards in a Laptop? (And Other Empirical Questions)', *Proceedings of the 2010 Int'l Telecom Union Section of Telecom. Standardization (ITU-T) Kaleidoscope Academic Conference* (2010).; Mark A Lemley, 'Intellectual Property

Rights and Standard-Setting Organizations' (2002) 90 Cal. L. Rev. 1989, 1906.

[xiii] *See, e.g.*, IEEE Standards Ass'n, IEEE-SA Standards Board Operations Manual § 6.2 (2023) ("The IEEE is not responsible for . . . determining whether any licensing terms or conditions . . . are reasonable or non-discriminatory."); Internet Engineering Task Force, Intellectual Property Rights in IETF Technology 9 (2017) ("[IETF] will not make any explicit determination that the assurance of reasonable and non-discriminatory terms or any other terms . . . has been fulfilled in practice.").

[xiv] *See, e.g.*, IEEE Standards Ass'n, IEEE-SA Standards Board Operations Manual § 5.3.10.2 (2023) ("No discussions or other communications regarding the following topics shall occur during . . . duly authorized IEEE-SA standards-development technical activities: . . . the essentiality, interpretation, or validity of patent claims; specific patent license terms or other intellectual property rights . . . ."). *See also* Jorge L Contreras, 'Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing' (2013) 79 Antitrust L.J. 47, 51–52 (discussing reasons for prohibitions),), 1965 (such restrictions are often intended to shield SDOs from antitrust liability).

[xv] Siebrasse (n 4).

[xvi] Richard A Epstein, 'The History of Public Utility Rate Regulation in the United States Supreme Court: Of Reasonable and Nondiscriminatory Rates' (2013) 38 J. Supreme Court Hist. 345, 346 (quoting Matthew Hale, "De Portibus Maris," *in* A COLLECTION OF TRACTS RELATIVE TO THE LAW OF ENGLAND 77–78 (Francis Hargrave ed., 1787)).

[xvii] *ibid.* 350–65.

[xviii] *ibid.* 348–50, 352–57 (discussing, *inter alia*, the Minnesota Rate Cases, 134 US 418 (1890) ("equal and reasonable" rates), and Smyth v. Ames, 169 US 466, 527 (1898) ("reasonable" rates)).

[xix] Stephen Breyer, *Regulation and Its Reform* (Harvard Univ Press 1982), 15-35.

[xx] Ibid. 36-70.

[xxi] Ibid. 156-61.

[xxii] Ibid. vii-viii.

[xxiii] Ibid. 285.

[xxiv] Howard A Shelanski, 'The Case for Rebalancing Antitrust Regulation' (2011) 109 Michigan Law Review 683, 725.

[xxv] Andrew F Popper, 'Collective Ratemaking: A Case Analysis of the Eastern Central Region and a Hypothesis for Analysing Competitive Structure' (1978) 10 Transportation Law Journal 365, 366.

[xxvi] *See* Epstein (n 16), 366.

[xxvii] *See, e.g.*, 2 NIMMER ON COPYRIGHT § 7.27[C] (2018) (discussing criticism of ad hoc Copyright Arbitration Royalty Panels).

[xxviii] See Robert P Merges, 'Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations' (1996) 84 Cal. L. Rev. 1293, 1317 (noting inefficiencies of serial court litigation over copyright license rates and suggesting a "rate court" as a means for avoiding excessive transaction costs).

[xxix] See William Boyd, 'Just Price, Public Utility, and the Long History of Economic Regulation in America' (2018) 35 Yale J. Reg. 721 (tracing history of "just price" determinations from Aristotle through modern public utility regulation).

[xxx] See Paul Stephen Dempsey, 'The Rise and Fall of the Interstate Commerce Commission: The Tortuous Path from Regulation to Deregulation of America's

Infrastructure' (2012) 95 Marquette Law Review 1151; Richard D Stone and Michael Landry, 'Sunsetting the ICC: Is It Really Dead?' (2004) 22 Essays in Economic and Business History 213.

[xxxi] Dempsey (n 30), 1152.

[xxxii] ICC Termination Act of 1995, Pub. L. No. 104-88, 109 Stat. 803 (1995). Discussed in Dempsey (n 30), 1185.

[xxxiii] Stone and Landry (n 30), 215, 217.

[xxxiv] Howard Freas, 'Ratemaking Powers of the Interstate Commerce Commission' (1962) 31 George Washington Law Review 54, 59 (citing relevant portions of the ICC Act and its various amendments).

[xxxv] Popper (n 25), 368.

[xxxvi] Ibid.

[xxxvii] 31 U.S.C. § 9701(a) (1952).

[xxxviii] Central & Southern Motor Freight Tariff Ass'n v. United States, 777 F.2d 722 (D.C. Cir. 1985).

[xxxix] 62 Stat. 472, 49 U.S.C. § 5b (1948).

[xl] Roger E Jerman and Ronald D Anderson, 'Regulatory Issues: Shipper Versus Motor Carrier' (1994) 33 Transportation Journal 15, 21.

[xli] Andrew F Popper, 'In Defense of Antitrust Immunity for Collective Ratemaking: Life After the ICC Termination Act of 1995' (1996) 35 Transportation Journal 26, 26.

[xlii] Many countries have rate-setting procedures for utilities. The US is discussed here for illustrative purposes only.

[xliii] Federal Power Act, 16 U.S.C. §§791–828c.

[xliv] 15 U.S.C. § 717(b).

[xlv] Earl W Kintner and others, *Federal Antitrust Law*, vol 9 (Matthew Bender & Company, Inc 2023). § 66.3[C][1] (also noting that in the case of "first sales" of

natural gas from a wellhead, FERC has deregulated pricing and authorized sellers to charge “market rates” in these transactions).

[xlvi] *See, e.g.,* Pac. Gas & Elec. Co. v. Pub. Utils. Comm’n, 188 Cal. Rptr. 3d 374, 378–79 (Cal. Ct. App. 2015) (describing the California Public Utilities Commission constitutional and statutory authority under Cal. Const., art. XII §5 and Cal. Pub. Util. Code §§701–718); State v. Pub. Util. Comm’n, 883 S.W.2d 190, 194 (Tex. 1994) (determining the scope of the Texas Public Utility Commission’s authority under the Public Utility Regulatory Act); Mercury Trucking, Inc. v. Pa. PUC, 55 A.3d 1056, 1059 (Pa. 2012) (describing the Pennsylvania Public Utility Commission as a statutory regulatory authority with power under 66 Pa. Cons. Stat. §§501–530).

[xlvii] Federal Power Act, 16 USC. §824d(a) (“All rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission . . . shall be just and reasonable”); Cal. Pub. Util. Code §451 (“All charges demanded or received by any public utility . . . shall be just and reasonable.”); 66 Pa. Cons. Stat. §1301 (“Every rate made, demanded, or received by any public utility . . . shall be just and reasonable, and in conformity with regulations or orders of the commission.”); Tex. Utils. Code §36.003 (“The regulatory authority shall ensure that each rate an electric utility or two or more electric utilities jointly make, demand, or receive is just and reasonable.”); Fla. Stat. §366.03 (“All rates and charges made, demanded, or received by any public utility for any service rendered . . . shall be fair and reasonable.”).

[xlviii] Pac. Gas & Elec. Co. v. Pub. Utils. Comm'n, 188 Cal. Rptr. 3d 374, 392–93 (Cal. Ct. App. 2015) (explaining that an aggrieved party may petition for review of the commission's decision in the court of appeal, but if no constitutional issue is presented the commission's decision has the same standing as a judgment of the superior court and is presumed correct); Tex. Utils. Code §15.001 ("Any party to a proceeding before the commission is entitled to judicial review under the substantial evidence rule."); PUC v. Tex. Indus. Energy Consumers, 620 S.W.3d 418, (Tex. 2021) ("We accord Commission decisions in contested rate cases particular deference . . . [and] must not reverse the Commission's rate determination unless it prejudices the Respondent's substantial rights.").

[xlix] *About the California Public Utilities Commission (CPUC)*, CAL. PUB. UTILS. COMM'N (2021), https://www.cpuc.ca.gov/about-cpuc/cpuc-overview/about-us.

[l] Cal. Const., art. XII §5; Cal. Public Util. Comm'n, 'CPUC History & Organizational Structure' (2021) <https://www.cpuc.ca.gov/about-cpuc/divisions/water-division/water-rates-and-general-rate-case-proceedings-section/general-rate-case-process>.

[li] *CPUC History & Organizational Structure*, CAL. PUB. UTILS. COMM'N (2021), https://www.cpuc.ca.gov/about-cpuc/divisions.

[lii] ibid.

[liii] ibid.

[liv] See Clean Energy Fuels Corp. v. Pub. Utils. Comm'n, 174 Cal. Rptr. 3d 297, 304 (Cal. Ct. App. 2014).

[lv] Gov.uk, 'Licensing bodies and collective management organisations', https://www.gov.uk/guidance/licensing-bodies-and-

collective-management-organisations#cmos-in-the-uk (visited Jan. 14, 2024).

[lvi] UK Intell. Prop. Off., 'Review of the Copyright Tribunal (2007)', 12.

[lvii] CDPA §145(2). There are currently seven ordinary members of the panel in addition to the Chairman and two Deputy Chairmen. *Membership*, GOV.UK, https://www.gov.uk/government/organisations/copyright-tribunal/about/membership (visited Jan. 14, 2024).

[lviii] CDPA §145(3).

[lix] Though proposals have been made that the Tribunal members possess some knowledge of intellectual property law (UK Intell. Prop. Off. (n 57), 16), these requirements have not been adopted in the rules or statutes concerning the Tribunal.

[lx] CDPA §147(3).

[lxi] CDPA §148(1).

[lxii] CDPA §119.

[lxiii] CDPA §129.

[lxiv] CDPA §129.

[lxv] ITV Network Ltd. v. Performing Right Society Ltd [2016] CT 127/14 [15]. Note the similarity to the US CRB's "willing buyer" standard.

[lxvi] UK Intell. Prop. Off. (n 57), 19.

[lxvii] UK Copyright Tribunal, 'The Copyright Tribunal Rules 2010 (Statutory Instruments 2010 No. 791)', § 26.

[lxviii] ITV Network Ltd. v. Performing Right Society Ltd [2016] CT 127/14 [15], [19].

[lxix] ibid. [26].

[lxx] ibid. [27].

[lxxi] ibid. [153].

[lxxii] UK Copyright Tribunal, 'Copyright Tribunal: Hearing Procedure and Listed Cases (Updated 18 Jul.

2019)' <https://www.gov.uk/guidance/copyright-tribunal-hearing-procedure-and-listed-cases>.

[lxxiii] UK Intell. Prop. Off. (n 57), 13-14, 20.

[lxxiv] ibid., 15-17.

[lxxv]UK Copyright Tribunal (n 72).

[lxxvi] ibid, Sched. 2 (Fees).

[lxxvii] CDPA §152.

[lxxviii] UK House of Commons, Innovation, Universities & Skills Committee, 'The Work and Operation of the Copyright Tribunal: Second Report of Session 2007–08 (Mar. 2008)'.

[lxxix] https://www.gov.uk/government/publications/copyright-tribunal-decisions-and-orders (visited Jan. 14, 2024).

[lxxx] UK Intell. Prop. Off. (n 57), 20.

[lxxxi] For general critiques of compulsory licensing of musical works in the US, see Merges (n 28), 1308-16 (arguing that the fixed $0.02 mechanical royalty rate and later adjudicated rates systematically undercompensated the owners of music copyrights, and even the voluntary licensing scheme that arose with the Harry Fox Agency was inadequate, as the compulsory license acted as a ceiling on royalty rates.)

[lxxxii] Act of Mar. 4, 1909, ch. 320, § 1(e), 35 Stat. 1075, 1075 (repealed 1976).

[lxxxiii] Jacob Victor, 'Reconceptualizing Compulsory Copyright Licenses' (2020) 72 Stan. L. Rev. 915, 921.

[lxxxiv] For a discussion of additional proposed and discontinued compulsory licensing schemes under US copyright law, see Robert Cassler, 'Copyright Compulsory Licenses - Are They Coming or Going' (1990) 37 J. Copyright Soc'y U.S.A. 231. Note that, while compulsory licensing forms the background against which US copyright rate-setting occurs, compulsory licensing

itself is not as relevant to the consideration of SEPs, given that the owners of SEPs who have participated in the standardization process have voluntarily agreed to license their patents, either on FRAND or royalty-free terms. As a result, compulsory licensing is not required in order to ensure widespread access to SEPs, except, possibly, in the relatively rare cases of SEP holders ("outsiders") who are not bound by an SDO's licensing commitments. See Jorge L Contreras, 'When a Stranger Calls: Standards Outsiders and Unencumbered Patents' (2016) 12 J. Comp. L. & Econ. 507.

[lxxxv] 17 USC. §§ 111, 119, 122.

[lxxxvi] 17 USC. § 116.

[lxxxvii] 17 USC. § 118(b). Notably, the public broadcasting compulsory license does not apply to the transmission or performance of literary or audiovisual works – television programs themselves. ibid, § 118(c), (f).

[lxxxviii] Digital Performance Right in Sound Recordings Act of 1995, Pub. L. No. 104-39, 109 Stat. 336.

[lxxxix] The transmission of recorded musical performances via analog means (e.g., terrestrial radio) and the live performance of recorded musical performances, may still be conducted in the United States without a license under the performance copyright. See Victor (n 83), 952. Licenses are required, however, with respect to the musical composition copyright, if any.

[xc] Digital Millennium Copyright Act, Pub. L. No. 105–304, 112 Stat. 2860 (codified as amended in scattered sections of 17 USC).

[xci] Licenses for interactive digital transmissions of sound recordings are subject to direct negotiation

between the owners of sound recording copyrights and streaming services. See Victor (n 83), 956-57.

[xcii] See 17 USC. § 114(f)(1)(B).

[xciii] Copyright Act of 1976 § 801.

[xciv] H.R. Rep. No. 103-286, at 9 (1993) (“with 15 years' experience, a clear record of the Tribunal's workload has been established. That workload is episodic and not sufficient to justify three full-time highly paid Commissioners.")

[xcv] Copyright Royalty Tribunal Reform Act of 1993, Pub. L. 103−198, 114 Stat. 303, enacted Dec. 17, 1993.

[xcvi] Report to Accompany H.R. 1417, Copyright Royalty and Distribution Reform Act Of 2003 at 18.

[xcvii] Copyright Royalty and Distribution Reform Act of 2004, Public Law 108–419, 118 STAT. 2341, enacted Nov. 30, 2004.

[xcviii] 17 USC. § 801(a).

[xcix] 17 USC. § 802(a)(1).

[c] 17 USC. § 802(a)(1).

[ci] 17 USC. § 802(a)(1).

[cii] 17 USC. § 802(c).

[ciii] Code of Conduct for United States Judges, Canon 2(B) (Mar. 12, 2019), https://www.uscourts.gov/judges-judgeships/code-conduct-united-states-judges.

[civ] Ibid., Canon 3(C).

[cv] Paul Fakler, ‘Music Copyright Royalty Rate-Setting Litigation: Practice Before the Copyright Royalty Board and How It Differs from ASCAP and BMI Rate Court Litigation’ (2013) 33 Licensing J. 9, 13 (observing that “[p]rocedurally, Copyright Royalty Board rate proceedings are quite unlike anything most litigators will have encountered.”)

[cvi] Fed. Rules Evid. 802.

[cvii] 17 USC. §803(b)(6)(C)(iii).

[cviii] 17 USC. §803(b)(6)(C)(vii).

[cix] §803(b)(3)

[cx] 37 C.F.R. §351.4.

[cxi] 17 USC. §803(b)(6)(C)(iii).

[cxii] 17 USC. §803(b)(6)(C)(vii).

[cxiii] 17 USC. §803(b)(6)(C)(x).

[cxiv] 37 C.F.R. §§351.8, 351.9.

[cxv] 37 C.F.R. §351.11.

[cxvi] 37 C.F.R. §351.14.

[cxvii] 17 USC. §803(c)(3).

[cxviii] Fakler (n 105), 14.

[cxix] 17 USC. § 802(a)(1); see also Indep. Producers Grp. v. Librarian of Cong., 792 F.3d 132, 135 (D.C. Cir. 2015) ("Under 17 USC. § 111(c), after a broadcast television station transmits copyrighted material to its viewers, cable systems may retransmit that material without first obtaining the copyright owner's permission. In exchange for that privilege, cable systems must deposit statutorily prescribed royalty fees with the Register of Copyrights. The Copyright Royalty Board is responsible for determining how to distribute those fees to the appropriate copyright owners." (citations omitted)).

[cxx] 17 USC. § 111(d)(4)(A).

[cxxi] *Id.* § 111(d)(4)(B)–(d)(4)(C), 801(b)(7).

[cxxii] *Id.* § 111(d)(4)(B).

[cxxiii] *Indep. Producers Grp.*, 792 F.3d at 135–36 (citations omitted).

[cxxiv] 17 USC. § 803(d)(1).

[cxxv] 17 U.S.C. § 803(d)(3).

[cxxvi] Intercollegiate Broad. Sys. v. Copyright Royalty Bd., 574 F.3d 748, 755 (D.C. Cir. 2009) (citing 5 USC. §706).

[cxxvii] Ibid. (citing E. Ky. Power Coop. v. FERC, 489 F.3d 1299, 1306 (D.C. Cir. 2007)).

[cxxviii] Nat'l Religious Broads. Noncommercial Music License Comm. v. Copyright Royalty Bd., 77 F.4th 949 (D.C. Cir. 2023).

[cxxix] Music Choice v. Copyright Royalty Bd., 970 F.3d 418 (D.C. Cir. 2020); Johnson v. Copyright Royalty Bd., 969 F.3d 363 (D.C. Cir. 2020).

[cxxx] Multigroup Claimants v. Copyright Royalty Bd., 788 Fed. Appx. 12 (D.C. Cir. 2019).

[cxxxi] SoundExchange, Inc. v. Copyright Royalty Bd., 904 F.3d 41 (D.C. Cir. 2018).

[cxxxii] Nat'l Religious Broads. Noncommercial Music License Comm. v. Copyright Royalty Bd., 77 F.4th 949, 952 (D.C. Cir. 2023) (sustaining the CRB's rate determination for noninteractive webcasters); SoundExchange, Inc. v. Copyright Royalty Bd., 904 F.3d 41, 46 (D.C. Cir. 2018) (sustaining the CRB's rate determination for noninteractive webcasters).

[cxxxiii] Multigroup Claimants v. Copyright Royalty Bd., 788 Fed. Appx. 12, at *13–14 (D.C. Cir. 2019).

[cxxxiv] Music Choice v. Copyright Royalty Bd., 970 F.3d 418, 420–21 (D.C. Cir. 2020) (finding that the CRB decision to exclude Music Choice from grandfathered rates conflicted with the DMCA and the CRB's alteration of audit standards was arbitrary and capricious); Johnson v. Copyright Royalty Bd., 969 F.3d 363, 367 (D.C. Cir. 2020) (vacating and remanding in part because the CRB failed to give adequate notice or to sufficiently explain critical aspects of its decisionmaking in setting the §115 royalty rate).

[cxxxv] Victor (n 83), 943.

[cxxxvi] 17 USC. § 801(b) (amended, 2018).

[cxxxvii] Victor (n 83), 944-45.

[cxxxviii] 17 USC. § 115(c)(1)(F) (2018)).

[cxxxix] 17 USC. § 114(f)(1)(B). Note that beyond use of the word “willing”, this “willing buyer willing seller” standard is not related to the “willing licensee” standard that is often invoked when considering whether a potential SEP licensee is “willing” to accept a license on FRAND terms for purposes of determining whether a SEP holder is entitled to seek or obtain an injunction to prevent infringement by that potential licensee. See Jorge L Contreras, ‘A Framework for Evaluating Willingness of FRAND Licensees’ [2021] Law360.

[cxl] Johnson v. Copyright Royalty Bd., 969 F.3d 363, 395 (D.C. Cir. 2020).

[cxli] Ibid., 395 (quoting 82 Fed. Reg. at 15,298–15,299). While the willing buyer-seller market-driven standard is relatively new for compulsory copyright licenses, the standard has been litigated in other contexts. For example, in determining whether a license negotiated between Universal Music Publishing Group (UPMG) and Pandora could be used as a benchmark for an ASCAP rate (see Section II.E, below), the rate court applied the willing buyer-seller standard. In re Pandora Media, Inc., 6 F. Supp. 3d 317, 360–61 (S.D.N.Y. 2014). It found that the license rate could not be said to represent a bargain between a willing buyer and seller because it was a contingent, short-term license in which UMPG demanded an extraordinarily steep increase and deprived Pandora of critical leverage in negotiations. Ibid. The standard, of course, bears similarities to the hypothetical negotiation used when calculating patent damages under the *Georgia-Pacific* framework. See Section III.B.2, infra.

[cxlii] 17 USC. § 118(b)(4).

[cxliii] Jacob Noti-Victor, 'Copyright's Law of Dissemination' (2023) 44 Cardozo L. Rev. 1769, 1796.

[cxliv] See ibid., 1793-94.

[cxlv] 17 USC. §111(d)(1); 17 USC. §119(b)(1)(B).

[cxlvi] 17 USC. §§ 111(d), 801(b)(2)-(3).

[cxlvii] Noti-Victor (n 143), 1817.

[cxlviii] Peter DiCola, 'Copyright Equality: Free Speech, Efficiency, and Regulatory Parity in Distribution' (2013) 93 B.U. L. Rev. 1837, 1879-80.

[cxlix] ADVANCE \r6 * MERGEFORMAT *See, e.g.*, *RIAA*, 608 F.3d at 864 (describing CRB proceedings "involving 28 days of live testimony, more than 140 exhibits, and more than 340 pleadings, motions, and orders").

[cl] 35 U.S.C. § 803(b)(6)(C).

[cli] U.S. Copyright Office, Library of Congress, Copyright Royalty Judges' Authority to Subpoena a Nonparticipant to Appear and Give Testimony or to Produce and Permit Inspection of Documents or Tangible Things, 75 Fed. Reg. 13,306, 13,310 (Mar. 19, 2010).

[clii] 35 U.S.C. § 803(c)(5).

[cliii]David R Strickler, 'Royalty Rate Setting for Sound Recordings by the United States Copyright Royalty Board: The Judicial Need for Independent Scholarly Economic Analysis' (2015) 12 Rev. Econ. Res. on Copyright Issues 1, 2; *see also RIAA*, 608 F.3d at 864 (CRB hearings regarding compulsory license rates in 2006 involved "28 days of live testimony, more than 140 exhibits, and more than 340 pleadings, motions, and orders.").

[cliv] Determination of Rates and Terms for Digital Performance of Sound Recordings and Making of Ephemeral Copies to Facilitate Those Performances (Web V), 86 Fed. Reg. 59,452 (Oct. 27, 2021).

[clv] *Web V*, 86 Fed. Reg. 59,453.

[clvi] ibid., 59,453.

[clvii] Fakler (n 105), 14.

[clviii] ibid.

[clix] Zachary N Zaharoff, 'Sending an S.O.S. to the World: How Foreign Benchmarks Could Improve Accuracy in Webcaster Rate Proceedings' (2017) 6 Berkeley Journal of Entertainment and Sports Law 79, 81 ("With only vague notions of the rates to which these companies would agree on their own accord, rate tribunals are left with speculative and unreliable methods for determining the value of music in a free market").

[clx] *Web V*, 86 Fed. Reg. at 59,491.

[clxi] ibid., 59,494.

[clxii] ibid., 59,546-47.

[clxiii] ibid., 59,547-48.

[clxiv] ibid., 59,478–82.

[clxv] ibid., 59,540.

[clxvi] ibid., 59,546.

[clxvii] 17 USC. § 803(b)(6)(C)(iii)–(iv) (2018) (Copyright Royalty Board - admissible evidence and discovery).

[clxviii] Fakler (n 105), 11.

[clxix] *See, e.g.,* Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords IV), 21-CRB-0001-PR (2023-2027) (setting the §115 statutory royalty rate for 2023-2027).

[clxx] *See, e.g.,* Cost of Living Adjustment to Royalty Rates for Making and Distributing Phonorecords, 23-CRB-0014-PR-COLA (2024) (adjusting the 2024 rate for cost of living).

[clxxi] US Copyright Royalty Bd., 'Case Search', https://app.crb.gov/search/cases (visited Jan. 14, 2024).

[clxxii] Fakler (n 105), 11. See also Victor (n 83), 938.

[clxxiii] Note that this license is distinct from the license for musical *performances*, which is covered by the compulsory licenses under Section 114 of the US Copyright Act.

[clxxiv] United States v. ASCAP, 1940-1943 Trade Cas. p 56,104 (S.D.N.Y.1941).

[clxxv] United States v. Am. Soc'y of Composers, Authors & Publishers, No. 41-1395 (WCC), 2001 WL 1589999 (S.D.N.Y. June 11, 2001); United States v. Broad. Music, Inc., No. 64 Civ. 3787, 1966 US Dist. LEXIS 10449 (S.D.N.Y. Dec. 29, 1966), modified, 1994 US Dist. LEXIS 21476 (S.D.N.Y. Nov. 18, 1994); Noti-Victor (n 143), 1799.

[clxxvi] *United States v. ASCAP*, 2001 US Dist. LEXIS 23707, at *3–18 (S.D.N.Y. June 11, 2001).

[clxxvii] Zaharoff (n 159), 92-93.

[clxxviii] *US v. ASCAP*, 2001 US Dist. LEXIS 23707, at *17.

[clxxix] ibid.

[clxxx] BMI v. DMX, Inc., 683 F.3d 32, 44-45 (2d Cir. 2012); *US v. ASCAP*, 2001 US Dist. LEXIS 23707, at *18.

[clxxxi] *US v. ASCAP*, 2001 US Dist. LEXIS 23707, at *19.

[clxxxii] *THP Capstar Acquisition Corp. v. ASCAP*, 756 F. Supp. 2d 516 (S.D.N.Y. 2010), *aff'd*, 683 F.3d 32 (2d Cir. 2012).

[clxxxiii] ibid. 518.

[clxxxiv] ibid. 519.

[clxxxv] ibid. 536.

[clxxxvi] *ASCAP*, 2001 US Dist. LEXIS 23707, at *20.

[clxxxvii] ibid.

[clxxxviii] ibid. *21.

[clxxxix] ASCAP v. MobiTV, Inc., 681 F.3d 76, 82 (2d Cir. 2012) (citations omitted).

[cxc] Pandora Media, Inc. v. Am. Soc'y of Composers, Authors & Publishers, 6 F. Supp. 3d 317, 354-55 (S.D.N.Y. 2014), aff'd, 785 F.3d 73 (2d Cir. 2015).

[cxci] Noti-Victor (n 143), 1820-21 (citations omitted).

[cxcii] Broad. Music, Inc. v. DMX Inc., 683 F.3d 32, 46 (2d Cir. 2012).

[cxciii] Kristelia A Garcia, 'Copyright Arbitrage' (2019) 107 California Law Review 199.; Kristelia A Garcia, 'Facilitating Competition by Remedial Regulation' (2016) 31 Berkeley Tech. L.J. 183.

[cxciv] United States v. Am. Soc'y of Composers, 627 F.3d 64, 76–79 (2d Cir. 2010).

[cxcv] Fakler (n 105), 14.

[cxcvi] BMI, 683 F.3d at 49.

[cxcvii] In re Pandora Media, Inc., 6 F. Supp. 3d 317 (S.D.N.Y. 2014), *aff'd*, 785 F.3d 73 (2d Cir. 2015); THP Capstar Acquisition Corp. v. Am. Soc'y of Composers, 756 F. Supp. 2d 516 (S.D.N.Y. 2010), *aff'd*, 2012 US App. LEXIS 12003 (2d Cir. 2012); Cromwell Group, Inc. v. ASCAP, 2010 US Dist. LEXIS 47364 (S.D.N.Y. 2010); United States v. ASCAP, 616 F. Supp. 2d 447 (S.D.N.Y. 2009) (determining interim fees for YouTube); United States v. ASCAP, 599 F. Supp. 2d 415 (S.D.N.Y. Jan. 30, 2009) (determining a blanket license for AT&T ring tones), *vacated*, 2010 US App. LEXIS 19983 (2d Cir. 2010); United States v. ASCAP, 485 F. Supp. 2d 438 (S.D.N.Y. Apr. 25, 2007) (determining reasonable fees for Yahoo!), *aff'd*, 627 F.3d 64 (2d Cir. 2010).

[cxcviii] Noti-Victor (n 143), 1800 (citing Daniel A Crane, 'Bargaining in the Shadow of Rate-Setting Courts' (2009) 76 Antitrust L.J. 307.)

[cxcix] *About NHS Hospital Services*, NHS (Apr. 18, 2023), https://www.nhs.uk/nhs-services/hospitals/about-nhs-hospital-services.

[cc] *Technology Appraisal Guidance*, Nat'l Inst. For Health & Care Excellence (2024), https://www.nice.org.uk/About/What-we-do/Our-Programmes/NICE-guidance/NICE-technology-appraisal-guidance.

[cci] ibid.

[ccii] *National Institute for Health and Care Excellence*, GOV.UK, https://www.gov.uk/government/organisations/national-institute-for-clinical-excellence (visited January 10, 2024); *What We Do*, NICE (2024), https://www.nice.org.uk/about/what-we-do.

[cciii] ibid.

[cciv] NICE, NICE PROCESS AND METHODS 1.2 (Oct. 31, 2023), https://www.nice.org.uk/process/pmg36/chapter/involvement-and-participation;Kalipso Chalkidou, 'Comparative Effectiveness Review Within the U.K.'s National Institute for Health and Clinical Excellence' <https://www.commonwealthfund.org/sites/default/files/documents/___media_files_publications_issue_brief_2009_jul_chalkidou_1296_chalkidou_uk_cer_issue_brief_717.pdf>.

[ccv] NICE, Appointments to Advisory Bodies: Policy and Procedure 4–5 (Nov. 2023).

[ccvi] Technology *Appraisal Guidance*, NICE (2024), https://www.nice.org.uk/About/What-we-do/Our-Programmes/NICE-guidance/NICE-technology-appraisal-guidance.

[ccvii] UK Dep't of Health & Soc. Care, 'The 2019 Voluntary Scheme for Branded Medicines Pricing and Access (Dec. 2018)'.

[ccviii] ibid.

[ccix] ibid.

[ccx] ibid.

[ccxi] Voluntary *Scheme for Branded Medicines Pricing and Access*, GOV.UK (Mar. 28, 2023), https://healthmedia.blog.gov.uk/2023/03/28/voluntary-scheme-for-branded-medicines-pricing-and-access-vpas-media-fact-sheet/.

[ccxii] The Branded Health Services Medicines (Costs) Regulations 2018 No. 345.

[ccxiii] UK Dep't of Health & Soc. Care (n 207).; *Voluntary Scheme for Branded Medicines Pricing and Access*, GOV.UK (Mar. 28, 2023), https://healthmedia.blog.gov.uk/2023/03/28/voluntary-scheme-for-branded-medicines-pricing-and-access-vpas-media-fact-sheet/.

[ccxiv] Grant Castle, Brian Kelly, & Raj Gathani, *Pricing & Reimbursement Laws and Regulations 2023*, GLOBAL LEGAL INSIGHTS (2023), https://www.globallegalinsights.com/practice-areas/pricing-and-reimbursement-laws-and-regulations/united-kingdom.

[ccxv] *NHS Saves £1.2 Billion on Medicines Over Three Years*, NHS ENGLAND (July 1, 2022), https://www.england.nhs.uk/2022/07/nhs-saves-1-2-billion-on-medicines-over-three-years/.

[ccxvi] 42 USC. §§1320f–1320f-7.

[ccxvii] The federal Medicare program provides healthcare coverage, including prescription drug coverage, for individuals aged 65 and older, as well as certain other individuals. See US Centers for Medicare and Medicaid Services, What's Medicare?, https://www.medicare.gov/what-medicare-covers/your-medicare-coverage-choices/whats-medicare

[ccxviii] U.S. Dept. Health & Human Servs., 'Biden-Harris Administration Moves Forward with Medicare Drug

Price Negotiations to Lower Prescription Drug Costs for People with Medicare (Oct. 3, 2023)' <https://www.hhs.gov/about/news/2023/10/03/biden-harris-administration-moves-medicare-drug-price-negotiations-lower-prescription-drug-costs-people-medicare.html>.

[ccxix] U.S. Dept. Health & Human Servs., 'Inflation Reduction Act Research Series: Trends in Utilization and Spending for Drugs Selected Under Medicare Drug Price Negotiation Program (Aug. 29, 2023)' <https://aspe.hhs.gov/reports/ira-research-series-medicare-drug-price-negotiation-program>.

[ccxx] US Dept. Health & Human Servs., 'Biden-Harris Administration Moves Forward with Medicare Drug Price Negotiations to Lower Prescription Drug Costs for People with Medicare (Oct. 3, 2023)' <https://www.hhs.gov/about/news/2023/10/03/biden-harris-administration-moves-medicare-drug-price-negotiations-lower-prescription-drug-costs-people-medicare.html>.

[ccxxi] ibid.

[ccxxii] ibid.

[ccxxiii] Centers for Medicare & Medicaid Services, 'Medicare Drug Price Negotiation Program: Revised Guidance, Implementation of Sections 1191-1198 of the Social Security Act for Initial Price Applicability Year 2026 (Jun. 30, 2023)' <https://www.cms.gov/files/document/revised-medicare-drug-price-negotiation-program-guidance-june-2023.pdf>., §§50–50.1.

[ccxxiv] ibid. §60.4. Centers for Medicare & Medicaid Services, 'Medicare Drug Price Negotiation Program: Manufacturer Agreements for the Selected Drugs for Initial Price Applicability Year 2026 (Oct. 3, 2023)'

<https://www.cms.gov/files/document/fact-sheet-manufacturer-agreements-selected-drugs-ipay-2026.pdf>.

[ccxxv] Centers for Medicare & Medicaid Services, 'CMS Drug Price Revised Guidance 2023' (n 228). §60.4. *See also* Centers for Medicare & Medicaid Services, 'Medicare Drug Price Negotiation Program Patient-Focused Listening Sessions (Dec. 6, 2023)' <https://www.cms.gov/inflation-reduction-act-and-medicare/medicare-drug-price-negotiation-program-patient-focused-listening-sessions>.

[ccxxvi] 42 U.S.C. §1320f-3(b)(2)(B), (C).

[ccxxvii] Centers for Medicare & Medicaid Services, 'Fact Sheet: Key Information on the Process for First Round of Negotiations for the Medicare Drug Price Negotiation Program (Sep. 2023)' <https://www.cms.gov/files/document/fact-sheet-negotiation-process-flow.pdf>.

[ccxxviii] Centers for Medicare & Medicaid Services, 'CMS Drug Price Revised Guidance 2023' (n 228), §60.4.

[ccxxix] ibid. §60.4.3. Although the statute does not specify a timeframe for negotiations, the revised guidance states that negotiations for initial price applicability year 2026 must end prior to August 1, 2024 (approximately six months from the initial offer deadline of Feb. 1, 2024. ibid.

[ccxxx] ibid. §60.4.4.

[ccxxxi] ibid.

[ccxxxii] Bobby Clark and Marlene Sneha Puthiyah, 'Can State Prescription Drug Affordability Boards Address High-Cost Drug Prices?' (Commonwealth Fund 2022) <https://www.commonwealthfund.org/blog/2022/can-state-prescription-drug-affordability-boards-address-high-cost-drug-prices>. For a chart comparing different state PDABs, see Nat'l Acad. for State Health Pol'y,

'Comparison of State Prescription Drug Affordability Review Initiatives (Mar. 31, 2022)' <https://nashp.org/comparison-of-state-prescription-drug-affordability-review-initiatives/>.

[ccxxxiii] Clark and Puthiyah (n 232).

[ccxxxiv] ibid.

[ccxxxv] Colo. Rev. Stat. §10-16-1407; Wash. Rev. Code §70.405.050.

[ccxxxvi] Nat'l Acad. for State Health Pol'y, 'States Take Diverse Approaches to Drug Affordability Boards (Feb. 12, 2021)' <https://nashp.org/states-take-diverse-approaches-to-drug-affordability-boards/>.

[ccxxxvii] Clark and Puthiyah (n 232).

[ccxxxviii] Maryland Prescription Drug Affordability Bd., 'About the Board' <https://pdab.maryland.gov/AboutUs.html> accessed 12 November 2023.

[ccxxxix] ibid.

[ccxl] Nat'l Acad. for State Health Pol'y, Comparison (n 232).

[ccxli] Nat'l Acad. for State Health Pol'y, Diverse Approaches (n 236).

[ccxlii] Oregon Prescription Drug Affordability Bd., 'Frequently Asked Questions (FAQs)' <https://dfr.oregon.gov/pdab/Pages/pdab-faqs.aspx> accessed 12 November 2023.

[ccxliii] ibid.

[ccxliv] Oregon Prescription Drug Affordability Bd., 'Board Calendar and Materials' <https://dfr.oregon.gov/pdab/Pages/board-calendar.aspx> accessed 12 November 2023.

[ccxlv] Oregon Prescription Drug Affordability Bd. (n 247).

[ccxlvi] ibid.

[ccxlvii] Clark and Puthiyah (n 232).

[ccxlviii] Nat'l Acad. for State Health Pol'y, Comparison (n 232).; Clark and Puthiyah (n 232).

Nat'l Acad. for State Health Pol'y, Diverse Aproaches (n 236).

[ccxlix] *See, e.g.,* Colo. Rev. Stat. Ann. §10-16-151 (capping prescription insulin at $100 for a 30-day supply); Ala. Code §27-63-1 (same); R.I. Gen. Laws §27-20.8-3 (capping prescription insulin at $40 per 30-day supply); Wash. Rev. Code §48.43.780 (capping prescription insulin at $35 per 30-day supply).

[ccl] 18 Del. Code Ann. §3580 (limiting the required copayment or coinsurance applicable to specialty drugs to $150 per month for a 30-day supply of any single drug); Md. Ins. Code Ann. §15-847 (same); La. Rev. Stat. §22:1060.5 (same).

[ccli] 18 Del. Code Ann. §3580.

[cclii] For a more detailed history of the interpleader action and an analysis of its applicability to aggregate FRAND determination cases, see Jason R Bartlett and Jorge L Contreras, 'Rationalizing FRAND Royalties: Can Interpleader Save the Internet of Things?' (2017) 36 Review of Litigation 285.

[ccliii] Ralph V Rogers, 'Historical Origins of Interpleader' (1941) 51 Yale L.J. 924.

[ccliv] Zechariah Chafee, Jr., 'Interpleader in the United States Courts' (1931) 41 Yale L.J. 1134, 1139.

[cclv] ibid., 1139.

[cclvi] See Cathy Hwang and Benjamin P Edwards, 'The Value of Uncertainty' (2015) 110 Nw. U. L. Rev. 283.

[cclvii] Zechariah Chafee, Jr., 'Modernizing Interpleader' (1921) 30 Yale L.J. 814, 822.

[cclviii] Zechariah Chafee, Jr., 'The Federal Interpleader Act of 1936' (1936) 45 Yale L.J. 963, 968.

[cclix] 28 USC. § 1335(a)(1).

[cclx] *Michelman v. Lincoln Nat'l Life Ins. Co.*, 685 F.3d 887, 895 (9th Cir. 2012) (interpleader proper when potential adverse claimant was reasonably believed to have a "colorable" claim to insurance proceeds).

[cclxi] See Bartlett and Contreras (n 252).

[cclxii] There is a large theoretical literature discussing different methods for determining FRAND royalty rates, an in-depth analysis of which is beyond the scope of this Report. For references, see Jorge L Contreras, 'Technical Standards, Standards-Setting Organizations and Intellectual Property: A Survey of the Literature (With an Emphasis on Empirical Approaches)' in Peter S Menell and David L Schwartz (eds), *Research Handbook on the Economics of Intellectual Property Law, Vol. II – Analytical Methods* (Edward Elgar 2019), 213-14.

[cclxiii] *See* 'Letter from Joel I. Klein, Acting Assistant Att'y Gen., US Dep't of Justice, Antitrust Div., to Gerrard [Sic] R. Beeney, Esq., Sullivan & Cromwell (June 26, 1997) (MPEG-2 Letter)'; 'Letter from Joel I. Klein, Assistant Att'y Gen., US Dep't of Justice, Antitrust Div., to Garrard R. Beeney, Esq., Sullivan & Cromwell (Dec. 16, 1998) (DVD 3C Letter)'; 'Letter from Joel L. Klein, Assistant Attorney General, US Dept. of Justice, to Carey R. Ramos, Esq., Paul, Weiss, Rifkind, Wharton & Garrison (Jun. 10, 1999) (DVD 6C Letter)' 'Letter from Charles A. James, Assistant Attorney General, US Dept. of Justice to Ky P. Ewing, Vinson & Elkins (Nov. 12, 2002) (3GPP Letter)'. 'Letter from Makan Delrahim, Asst. Atty. Gen., U.S. Dept. Justice, to Mark H. Hamer, Baker & McKenzie (Jul. 28, 2020) (Avanci Letter)'.

[cclxiv] U.S. Dept. Justice and Federal Trade Comm'n (n 7), 71.

[cclxv] *See* Julia Brito and Hector Axel Contreras Alvarez, 'Patent Pools: A Practical Perspective—Part I' (2021) 56 Les Nouvelles 341, 346; Robert P Merges and Michael Mattioli, 'Measuring the Costs and Benefits of Patent Pools' (2017) 78 Ohio St. L.J. 281. See also Section IV.E.2.a, below (discussing essentiality checking among patent pools).

[cclxvi] Biddle, White and Woods (n 12). (of 251 standards embodied in a typical laptop computer, only 3% were covered by patent pools); Tim Pohlmann and Knut Blind, 'Landscaping Study on Standard Essential Patents (SEPs), Commissioned by DG GROW Unit F.5' (Eur Comm 2016), 36-37 (91% of the worldwide declared SEPs are licensed individually rather than through a patent pool).

[cclxvii] See Julia Brito and Hector Axel Contreras Alvarez, 'Patent Pools: A Practical Perspective—Part II' (2022) 57 Les Nouvelles 39, 42. As one industry veteran recently observed, "There is no methodology or theory which is applied to deciding what the royalty rates should be." Erik Stasik, 'Royalty Sharing in SEP Patent Pools – How the Sausage Gets Made' (*Intell. Asset Mgt.*, 22 November 2023).

[cclxviii] See Brito and Contreras Alvarez (n 267), 42.

[cclxix] ibid., 42 ("a common characteristic of pool licenses is that the key terms are often non-negotiable."); Merges and Mattioli (n 265), 297 ("by standardizing the terms on which they offer their bundled rights through form contracts, patent pools render costly negotiations unnecessary.") One exception is sometimes a discounted fee, or no fee at all, for some or all contributors to the pool.

[cclxx] See Brito and Contreras Alvarez (n 267), 40.

[cclxxi] See Anne Layne-Farrar and Josh Lerner, 'To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules' (2011) 29 Int'l J. Indus. Org. 294, 296.

[cclxxii] ibid., 295; Brito and Contreras Alvarez (n 267), 39-40.

[cclxxiii] 'Letter from Makan Delrahim, Assistant Attorney General, U.S. Dept. Justice Antitrust Div., to Mark H. Hamer, Baker & McKenzie, Dated July 28, 2020'.

[cclxxiv] Richard H Stern, 'Who Should Own the Benefits of Standardization and the Value It Creates?' (2018) 19 Minnesota Journal of Law, Science & Technology 107, 248 ("Our SEP royalty system now operates substantially as a regulatory scheme in which the one-time role of the ICC for railroad rate regulation is played by the courts").

[cclxxv] See, e.g., Justus Baron and others, 'Empirical Assessment of Potential Challenges in SEP Licensing, Report Commissioned by the Eur. Comm'n Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, GROW/2021/MVP/0010' (Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs 2023) GROW/2021/MVP/0010, 75 (Table 10) and 198-202 (Appendix 4) (comparing parties' proposed FRAND rates and courts' adjudicated rates in selected cases in Germany, India, UK and US).

[cclxxvi] *See generally* ibid.; Brian J Love and Christian Helmers, 'Are Market Prices for Patent Licenses Observable? Evidence from 4G and 5G Licensing' (2022) 24 Col. Sci. & Tech. L. Rev. 55; Matthieu Dhenne, 'Calculation of FRAND Royalties: An Overview of Practices Around the World' (2019) 41 Eur. Intell. Prop. Rev. 754; Bowman Heiden, 'Competing Value Logics in the Apportionment of SEP Damages: A Comparison of

FRAND Royalty Methodologies in U.S. Courts 2013-15' in Kai Jakobs (ed), *Corporate and Global Standardization Initiatives in Contemporary Society* (IGI Global 2018); Stern (n 274); Anne Layne-Farrar and Koren W Wong-Ervin, 'Methodologies for Calculating FRAND Damages: An Economic and Comparative Analysis of the Case Law from China, the European Union, India, and the United States' (2017) 8 Jindal Global L. Rev. 127; Chryssoula Pentheroudakis and Justus Baron, 'Licensing Terms of Standard Essential Patents. A Comprehensive Analysis of Cases' [2017] JRC Science for Policy Report. EUR 28302; Norman V Siebrasse and Thomas F Cotter, 'Judicially Determined FRAND Royalties' in Jorge L Contreras (ed), *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents* (Cambridge Univ Press 2017).

[cclxxvii] For a discussion of the differences between adjudication of patent damages and FRAND royalty rates in the US and other jurisdictions, see Jorge L Contreras and others, 'The Effect of FRAND Commitments on Patent Remedies' in C Bradford Biddle and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019), 160, 161-63.

[cclxxviii] Microsoft v. Motorola, 2013 US Dist. LEXIS 60233 (W.D. Wash., 2013), aff'd 795 F.3d 1024 (9th Cir. 2015) (recognizing the existence of non-US patents but focusing its analysis only on US patents).

[cclxxix] In re. Innovatio IP Ventures LLC, 2013 US DIST. Lexis 144061 (N.D. Ill. 2013).

[cclxxx] Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1225–29 (Fed. Cir. 2014).

[cclxxxi] Optis v. Huawei, No. 2:17-cv-123-JRG-RSP, 2018 WL 476054 (E.D. Tex. Jan. 18, 2018).

[cclxxxii] Unwired Planet Intl. Ltd. v. Huawei Techs. Co. Ltd. [2017] EWHC (Pat) 711 (Eng.), aff'd [2020] UKSC 37.

[cclxxxiii] EWHC (Pat) 711, ¶ 524.

[cclxxxiv] ibid. ¶ 534. Some comparable licenses, e.g., excluded China.

[cclxxxv] *Ibid*. ¶ 538.

[cclxxxvi] *Ibid*. ¶ 543.

[cclxxxvii] *Ibid*. ¶ 543-44 (the judge refers to such a prospect as "madness").

[cclxxxviii] *Ibid*. ¶¶ 583, 589.

[cclxxxix] *Ibid*. ¶ 807(18).

[ccxc] Mark Cohen, 'Oppo v. Nokia in Context' (*China IPR*, 18 December 2023) <https://chinaipr.com/2023/12/18/oppo-v-nokia-in-context/>.

[ccxci] ibid. (supplying unofficial translation and criticizing differential rate reasoning).

[ccxcii] Theodore Stevenson, Nicholas Mathews and Patrick Pijils, 'US Courts Should Adjudicate FRAND Rates on A Global Basis' (*Law360*, 3 December 2020) <https://www.law360.com/articles/1332630/us-courts-should-adjudicate-frand-rates-on-a-global-basis>.

[ccxciii] Timothy D Syrett, 'US Courts Have Limited Ability to Set FRAND Rates Globally' (*Law360*, 22 January 2021) <https://www.law360.com/articles/1347298/us-courts-have-limited-ability-to-set-frand-rates-globally>.

[ccxciv] Jorge L Contreras, 'Anti-Suit Injunctions and Jurisdictional Competition in Global FRAND Litigation: The Case for Judicial Restraint' (2021) 11 NYU J. Intell. Prop. & Ent. L. 171.

[ccxcv] 35 USC. § 284.

[ccxcvi] *Georgia-Pacific Corp v US Plywood Corp* (1970) 318 F Supp 1116 (SDNY). Numerous commentators have criticized the application of the *Georgia-Pacific* patent damages framework to FRAND rate determinations. *See, e.g.*, Jorge L Contreras and Richard J Gilbert, 'A Unified Framework for RAND and

Other Reasonable Royalties' (2015) 30 Berkeley Tech. L.J. 1447.; J Gregory Sidak, 'The Meaning of FRAND, Part I: Royalties' (2013) 9 Journal of Competition Law & Economics 931.

[ccxcvii] Studiengesellschaft Kohle mbH v. Dart Indus., Inc., 666 F. Supp. 674, 680 (D. Del. 1987).

[ccxcviii] See Contreras and Gilbert (n 296), 1482-86.

[ccxcix] *Georgia-Pacific* (n 296).

[ccc] Stern (n 274), 120-21.

[ccci] ibid., 249-50 ("Since the surplus exists only because the state decided to permit the monopolistic conduct, the state may (on Hobbesian principles) decide how to allocate the surplus … If the state decides to allocate the surplus value, over and above ex-ante value, to consumers, that is within its powers…")

[cccii] See Joseph Farrell and others, 'Standard Setting, Patents, and Hold-Up' (2007) 74 Antitrust L.J. 603, 610; Dennis W Carlton and Allan Shampine, 'An Economic Interpretation of FRAND' (2013) 9 Journal of Competition Law & Economics 531, 536-37.

[ccciii] U.S. Federal Trade Comm'n, *The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition* (2011), 22-23 ("A definition of [F]RAND based on the ex ante value of the patented technology at the time the standard is chosen is necessary for consumers to benefit from competition among technologies to be incorporated into the standard").

[ccciv] *Commonwealth Scientific & Industrial Research Organisation v Cisco Systems, Inc (CSIRO)* (2015) 809 F3d 1295 (Fed Cir), 1305. *See also Ericsson v D-Link* (n 280), 1233 ("[U.S.] Supreme Court precedent also requires apportionment of the value of the patented technology from the value of its standardization"); *Microsoft Corp v Motorola, Inc* [2013] WD Wash C10-

1823JLR, 2013 US Dist LEXIS 60233, *43-44 (“a [F]RAND commitment should be interpreted to limit a patent holder to a reasonable royalty on the economic value of its patented technology itself, apart from the value associated with incorporation of the patented technology into the standard.”)

[cccv] Eur. Comm’n, ‘Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee: Setting out the EU Approach to Standard Essential Patents. COM(2017) 712’ https://ec.europa.eu/docsroom/documents/26583, 6. See also Group of Experts on Licensing and Valuation of Standard Essential Patents (E03600), *Contribution to the Debate on SEPs* (2021) <https://ec.europa.eu/docsroom/documents/45217>., 99-100 (discussing ex ante approach as the current approach to determining FRAND royalties).

[cccvi] Unwired Planet Intl Ltd v Huawei Techs (UK) Co Ltd (2017) [2017] EWHC (Pat) 711. ¶ 97.

[cccvii] ibid.

[cccviii] *Optis Cellular Tech LLC v Apple Retail UK Ltd* (2023) 2023 EWHC 1095 (EWHC (Ch)). 128, ¶ 228 (“I can see no justification for excluding altogether from the SEP Owner’s reward the contribution made by SEPs to the Standard itself.”)

[cccix] See Daniel F Spulber, ‘Finding Reasonable Royalty Damages: A Contract Approach to Patent Infringement’ (2019) 2019 University of Illinois Law Review 615, 634 (proposing an “informed contract” approach to royalty determination which “is based on the actions of the patent holder and the infringer during the period of infringement”); Norman V Siebrasse and Thomas F Cotter, ‘The Value of the Standard’ (2017) 101

Minnesota Law Review 1159, 1164 (“a FRAND royalty should reflect the incremental contribution of the patent to the value of the standard to the user.”); Sidak, ‘The Meaning of FRAND, Part I: Royalties’ (n 296), 976 (“There is no basis in fact or economic theory to assume that in all cases the *ex ante* incremental value interpretation of FRAND would suffice to give an inventor a sufficiently large payoff in expected value terms to cause that inventor to decide to monetize his patents through participation in the open standard of an SSO rather than through some other business strategy.”)

[cccx] This technique is common to many patent damages cases across industries, including cases involving non-SEPs. In the US, it has roots in *Georgia-Pacific* Factor #1, calling for consideration of “[t]he royalties received by the patent holder for licensing the patent, proving or tending to prove an established royalty”.

[cccxi] J Gregory Sidak, ‘Apportionment, FRAND Royalties, and Comparable Licenses After Ericsson v. D-Link’ (2016) 2016 University of Illinois Law Review 1809, 1821.

[cccxii] *Unwired Planet (EWHC)* (n 311), ¶¶ 71, 180, 462. As observed by Thomas Cotter and Norman Siebrasse, Ericsson’s SEP transfer to Unwired Planet was a “privateering” arrangement in which Ericsson was entitled to a share of Unwired Planet’s revenue earned from licensing and enforcing the transferred SEPs. Siebrasse and Cotter (n 276), 386.

[cccxiii] See Haris Tsilkas, ‘Emerging Patterns in the Judicial Determination of FRAND Rates: Comparable Agreements and the Top-Down Approach for FRAND Royalties Determination’ (2020) 69 GRUR Intl. 885, 886-87; Dhenne (n 276), 757.

[cccxiv] See Huawei v InterDigital, Guangdong High Court (Yue Gaofa Minsan Zhougzi Nos 305 and 306, (28 October 2013) (discussed in Dhenne (n 276), 757).

[cccxv] *Ericsson, Inc. v. D-Link Sys., Inc.* (n 280), 1227-28.

[cccxvi] ibid.

[cccxvii] Love and Helmers (n 276), 60.

[cccxviii] *Apple Inc v Motorola, Inc* (2014) 757 F 3d 1286 (Fed Cir), 1326.

[cccxix] Baron and others, 'Empirical Assessment' (n 275), 77 (emphasis omitted), and 203-10 (Appendix 5) (presenting court's assessment of all proposed comparable licensing agreements in a number of US and UK FRAND cases).

[cccxx] This Report discusses, in a number of places, the analysis and recommendations of the European Commission's "Group of Experts on Licensing and Valuation of Standard Essential Patents (E03600)" (European Expert Group). It should be noted that the 13 Group members were not unanimous in their recommendations, and as a result the Group's 79 numbered Proposals are each rated by the members on a 5-star scale (similar to ratings for restaurants and Uber drivers). European Expert Group (n 305), 18. Given this complexity, this Report does not attempt to characterize the Group's Proposals in terms of their "star" ratings. Readers are referred to the Group's full report for these details.

[cccxxi] ibid., 102.

[cccxxii] Microsoft Corp. v. Motorola, Inc. (n 8), 1043.

[cccxxiii] ibid., 1044. In an effort to clarify its own FRAND licensing commitment, the IEEE Standards Association amended its patent policy in 2022 to explain that an "optional consideration" in determining a FRAND

royalty rate is “Existing licenses covering use of the Essential Patent Claim, where the circumstances and resulting licenses are sufficiently comparable to the circumstances of the contemplated license.” This language replaced an earlier clause adopted in 2015 that stated that such comparable licenses excluded those “obtained under the explicit or implicit threat of a Prohibitive Order” (i.e., an injunction in litigation). IEEE SA Standards Board Bylaws, § 6.1 (2023).

[cccxxiv] Thomas F Cotter and others, ‘Reasonable Royalties’ in C Bradford Biddle and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019), 36-46; Colleen V Chien and Eric Schulman, ‘Patent Semi-Comparables’ (2018) 25 Tex. Intell. Prop. L.J. 215, 226-27; Jonathan S Masur, ‘The Use and Misuse of Patent Licenses’ (2015) 110 Nw. U. L. Rev. 115, 121.

[cccxxv] Baron and others, Empirical Assessment (n 275), 66; Love and Helmers (n 276), 60; European Expert Group (n 305), 103; Chien and Schulman (n 324), 226.; Masur (n 324), 120.

[cccxxvi] See Masur (n 324).

[cccxxvii] Chien and Schulman (n 324), 241 (“Experts should explicitly call out the relevant differences in terms between a comparable or semi-comparable license and the hypothetical license being constructed in the context of the damages analysis and make appropriate adjustments for these term differences when arguing for a reasonable royalty.”); J Gregory Sidak, ‘Using Regression Analysis of Observed Licenses to Calculate a Reasonable Royalty for Patent Infringement’ (2017) 2 Criterion J. Innovation 501. (proposing regression analysis as a method for utilizing non-identical comparable licenses in rate determination); David O

Taylor, 'Using Reasonable Royalties to Value Patented Technology' (2014) 49 Georgia L. Rev. 79, 131 ("Rather than excluding evidence of negotiated royalties, economists may adjust negotiated royalties based on the extent to which they reflect valuation of patent rights.")

[cccxxviii] European Expert Group (n 305), 102-03.

[cccxxix] *FTC v Qualcomm Inc* (2019) 411 F Supp 3d 658 (ND Cal), 751, rev'd on other grounds and vacated, 969 F.3d 974 (9th Cir. 2020).

[cccxxx] *See* Cornell Univ. v. Hewlett-Packard Co., 698 F.Supp.2d 279 (N.D.N.Y. 2009) (first articulating the SSPPU test).

[cccxxxi] *See Ericsson, Inc. v. D-Link Sys., Inc.* (n 280), 1227 (comparing EMVR and SSPPU approaches in SEP cases).

[cccxxxii] *See* Cotter and others (n 324), 41-46; Contreras, 'Technical Standards, Standards-Setting Organizations and Intellectual Property: A Survey of the Literature (With an Emphasis on Empirical Approaches)' (n 262), 214-15; David J Kappos and Paul R Michel, 'The Smallest Salable Patent-Practicing Unit: Observations on Its Origins, Development, and Future' (2017) 32 Berkeley Tech. L.J. 1433.; Siebrasse and Cotter (n 276), 375-77; J Gregory Sidak, 'The Proper Royalty Base for Patent Damages' (2014) 10 J. Comp. L. & Econ. 989.

[cccxxxiii] IEEE SA Standards Board Bylaws, § 6.1 (Sept. 2022); 'Letter from Renata B. Hesse, Acting Assistant Att'y Gen., U.S. Dep't of Justice, Antitrust Div., to Michael A. Lindsay (Feb. 2, 2015) (IEEE Letter 2)'. (approving IEEE policy amendments).

[cccxxxiv] *Ericsson, Inc. v. D-Link Sys., Inc.* (n 280), 1227.

[cccxxxv] See Japan Patent Office, Guide to Licensing Negotiations Involving Standard Essential Patents (2018), 33-38.

[cccxxxvi] Keith Mallinson, 'Don't Fix What Isn't Broken: The Extraordinary Record of Innovation and Success in the Cellular Industry under Exiting Licensing Practices' (2016) 23 Geo. Mason L. Rev. 967, 995.

[cccxxxvii] *See* Mark A Lemley and Carl Shapiro, 'Patent Hold-Up and Royalty Stacking' (2007) 85 Tex. L. Rev. 1991, 2013–15 (describing the problems of Cournot complements and double marginalization and their potential to lead to hold-up in SEP markets), Farrell and others (n 302), 642 ("the sum of the incremental values of [multiple] patents exceeds their value in combination"). *But see* Daniel F Spulber, 'Patent Licensing and Bargaining with Innovative Complements and Substitutes' (2016) 70 Research in Economics 693, 694 (refuting application of Cournot complements theory to situations in which bargaining over patent royalties exists).

[cccxxxviii] *Ericsson, Inc. v. D-Link Sys., Inc.* (n 280). See also *In re Innovatio IP Ventures, LLC* (n 279), *62 ("the determination of a [F]RAND royalty must address the risk of royalty stacking by considering the aggregate royalties that would apply if other [SEP] holders made royalty demands of the implementer.")

[cccxxxix] *See, e.g.*, Keith Mallinson, 'Discovering or Setting Aggregate Royalties and FRAND Rates For SEP Portfolios' (2024) 19 Journal of Law, Economics & Policy 1; Justus A Baron, 'The Commission's Draft SEP Regulation – Focus on Proposed Mechanisms for the Determination of "Reasonable Aggregate Royalties"' [2023] 4iP Council <https://www.4ipcouncil.com/application/files/3016/9384/7247/The_Commission_s_Draft_SEP_Regulation_-

_Focus_on_Proposed_Mechanisms_for_the_Determination.pdf>.; Alexander Galetovic and Kirti Gupta, 'The Case of the Missing Royalty Stacking in the World Mobile Wireless Industry' (2020) 29 Indus. & Corporate Change 827; Contreras, 'Technical Standards, Standards-Setting Organizations and Intellectual Property: A Survey of the Literature (With an Emphasis on Empirical Approaches)' (n 262), 200-02 (collecting literature); Alexander Galetovic, Stephen Haber and Lew Zaretski, 'An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results"' (2018) 42 Telecommunications Policy 263; Jonathan M Barnett, 'Has the Academy Led Patent Law Astray?' (2017) 32 Berkeley Tech. L.J. 1527, 1356-61; Mallinson, 'Don't Fix What Isn't Broken' (n 336).

[cccxl] *In re Innovatio IP Ventures, LLC* (n 279), *163. *See also* Thomas F Cotter, 'Patent Damages Heuristics' (2018) 25 Tex. Intell. Prop. L.J. 159, 206-07 (discussing *Innovatio* top-down analysis); Pentheroudakis and Baron (n 281), 95-96 (analyzing top-down approaches *Innovatio* and other cases). The US District Court for the Central District of California also used a top-down approach to calculate FRAND royalties in TCL Communications v. Ericsson, Memorandum of Findings of Fact and Conclusions of Law (C.D. Cal., Dec. 21, 2017, SACV 14-341 JVS(DFMx) and CV 15-2370 JVS (DFMx)). However, this decision was vacated by the Court of Appeals for the Federal Circuit on other grounds. *TCL Commun Tech Holdings Ltd v Telefonaktiebolaget LM Ericsson* (2019) 943 F3d 1360 (Fed Cir).

[cccxli] Apple Japan Godo Kaisha v. Samsung Electronics Co., Ltd., IP High Court of Japan, 2013 (Ne) 10043 (May 16, 2014).

[cccxlii] *Ibid*., 132, 137-38.

[cccxliii] [2017] EWHC 711 (Pat) (Apr. 5, 2017), ¶476.

[cccxliv] InterDigital Tech. Corp. v. Lenovo Group Ltd., [2023 EWHC] 539 [Pat] (Mar. 16, 2023), ¶ 945. Despite the court's rejection of Interdigital's top-down analysis, the court spends a great deal of time discussing top-down analyses in the other cases mentioned in notes 340-343, supra (¶¶ 255-258).

[cccxlv] Optis Cellular Tech. LLC v. Apple Retail UK Ltd. [2023] EWHC 1095 (Ch) (10 May 2023), ¶ 456.

[cccxlvi] Optis, ¶¶ 459-487. Note that most of the numerical values have been redacted from the public version of the court's opinion.

[cccxlvii] See Baron, Commission's Draft SEP Regulation (n 339); Tsilkas (n 318).= 890; David J Teece, 'Patent Counting and the "Top-Down" Approach to Patent Valuations: An Economic and Public Policy Appraisal of Reasonable Royalties' (2020) 5 Criterion J. Innovation 157.; Jorge L Contreras, 'Aggregated Royalties for Top-Down FRAND Determinations: Revisiting "Joint Negotiation"' (2017) 62 Antitrust Bull. 690, 694-96.

[cccxlviii] Unwired Planet (EWHC) (n 311), ¶ 269.

[cccxlix] *In re Innovatio IP Ventures, LLC* (n 279). *174.

[cccl] ibid. *180.

[cccli] See Contreras, 'Aggregated Royalties' (n 352), 696.

[ccclii] While numerical proportionality does not account for the relative values of different patents within a pool, it is nonetheless used by a number of patent pools. See Layne-Farrar and Lerner (n 271). For objections to the numerical proportionality method for allocation of aggregated SEP royalties, see Teece (n 347), 167-74.

[ccliii] J Gregory Sidak, 'Judge Selna's Errors in TCL v. Ericsson Concerning Apportionment, Nondiscrimination, and Royalties Under the FRAND Contract' (2019) 4 Criterion J. Innovation 101, 153-55.

[ccliv] European Expert Group (n 305), 108.

[cclv] ibid., 109-10.

[cclvi] ibid., 110-11.

[cclvii] ibid., 111. See J Gregory Sidak and Jeremy O Skog, 'Hedonic Prices and Patent Royalties' (2017) 2 Criterion J. Innovation 601. This article has spawned a number of responses and rejoinders in the literature, all of which are beyond the scope of this Report.

[cclviii] *See* Richard AH Vary, 'Arbitration of FRAND Disputes in SEP Licensing' in John VH Pierce and Pierre-Yves Gunter (eds), *The Guide to IP Arbitration* (Global Arbitration Rev 2021). (describing four publicly disclosed arbitrations of cellular SEP portfolio royalty amounts); Damien Geradin, 'FRAND Arbitration: The Determination of Fair, Reasonable and Non-Discriminatory Rates for SEPs by Arbitral Tribunals' [2016] CPI Antitrust Chron. (observations from personal experience as an arbitrator in SEP cases).

[cclix] See Vary (n 358). (discussing US FTC, European Commission and Chinese Ministry of Commerce); Jorge L Contreras, 'Global Rate-Setting: A Solution for Standards Essential Patents?' (2019) 94 Wash. L. Rev. 701, 727-28 (discussing US FTC and Japan Intellectual Property Office).

[cclx] 35 USC. §§ 294.

[cclxi] Marc Labgold and Megan Labgold, 'Should I Arbitrate My Patent Dispute?' (*Kluwer Arbitration Blog*, 29 November 2022) <https://arbitrationblog.kluwerarbitration.com/2022/11/29/should-i-arbitrate-my-patent-dispute/?output=pdf>. Under the UK Patent Act of 1977, a request for a compulsory patent license under §§ 48-51 of the Act may be referred by the comptroller to arbitration under certain limited circumstances. § 52(5).

[cccLxii] ibid. (quoting WIPO, Why Arbitration in Intellectual Property?, https://www.wipo.int/amc/en/arbitration/why-is-arb.html).

[cccLxiii] Additional issues not covered in this Section are discussed at length in Jorge L Contreras and David Newman, 'Developing a Framework for Arbitrating Standards-Essential Patent Disputes' (2014) 2014 J. Dispute Resol. 23. (discussing a range of procedural issues to be addressed when submitting a SEP dispute to arbitration).

[cccLxiv] Eur. Comm'n, Patents and Standards: A Modern Framework for IPR-Based Standardization (2014), 178. See also Japan Patent Office, Guide to Licensing Negotiations Involving Standard Essential Patents (n 340), 19-20; Michaela S Halpern, International Intellectual Property Arbitration Through the Lens of FRAND (Full Court Press 2023), 115-47.

[cccLxv] Convention on the Recognition and Enforcement of Foreign Arbitral Awards, June 10, 1958, 21 UST. 2517, 330 U.N.T.S. 38 [hereinafter New York Convention]. *But see* Pierre Larouche, Jorge Padilla and Richard S Taffet, 'Settling FRAND Disputes: Is Mandatory Arbitration a Reasonable and Nondiscriminatory Alternative?' (2014) 10 J. Comp. L. & Econ. 581, 607-08 (pointing out difficulties with international enforcement of arbitral awards in a number of countries including China, India and Russia); Jacques de Werra, 'Global Policies for Arbitrating Intellectual Property Disputes' in Jacques de Werra (ed), *Research Handbook on Intellectual Property Licensing* (2013), 373 (discussing risk of non-enforcement under the New York Convention).

[cccLxvi] See Contreras, 'Anti-Suit Injunctions and Jurisdictional Competition' (n 294).

[cclxvii] *See* Richard Arnold, 'The EU's WTO Complaint against China Can Only Be Resolved by Establishing Legally Enforceable Global Arbitration of SEP Disputes' (2022) 17 J. Intell. Prop. L. & Practice 329.; Richard Arnold, 'SEPS, FRAND and Mandatory Global Arbitration' (2021) 2021 GRUR 123.

[cclxviii] Am. Arbitration Assn., *Resolution of Patent Disputes Supplementary Rules* (2006) <https://www.adr.org/sites/default/files/Resolution%20of%20Patent%20Disputes%20Supplementary%20Rules.pdf> .

[cclxix] Munich IP Dispute Resolution Forum, 'FRAND ADR Case Management Guidelines' https://www.ipdr-forum.org/frand-adr-guidelines/.

[cclxx] World Intell. Prop. Org., *WIPO ADR Options for FRAND Dispute Management and Resolution* (2022) <https://www.wipo.int/export/sites/www/amc/en/docs/2022/wipo_adr_options_for_frand_disputes_management_resolution.pdf>. See also Eli Greenbaum, 'Forgetting FRAND: The WIPO Model Submission Agreements' (2015) 50 Les Nouvelles 81.

[cclxxi] DVB Project, 'Memorandum of Understanding Further Amended and Restated for the Development of Harmonized Digital Video Broadcasting (DVB) Services Based on European Specifications (3 Jan. 2014)' <https://dvb.org/wp-content/uploads/2019/12/dvb_mou.pdf>., ¶ 14.7. As of 2014, no actions had been brought at the ICC under the DVB arbitration policy. See Carter Eltzroth, 'Arbitration of Intellectual Property Disputes' (2014) 19 Arbitration News 88. The author is unaware of any such actions since 2014.

[cclxxii] Unified Patent Court, 'Patent Mediation and Arbitration Centre', https://www.unified-patent-

court.org/en/court/patent-mediation-and-arbitration-centre (visited Jan. 16, 2024).

[cccLxxiii] Vary (n 347) (concluding, however, that "[n]one of these objections have merit").

[cccLxxiv] Arnold (n 367), 123.

[cccLxxv] See Alexander JS Colvin, 'The Metastisization of Mandatory Arbitration' (2019) 94 Chicago-Kent Law Review 3.

[cccLxxvi] *See* Gary B Born, *International Commercial Arbitration: Commentary & Materials* (2nd edn, 2001), 53 ("The foundation for almost every international arbitration is an international arbitration agreement. Absent a valid agreement to arbitrate, there is generally no basis for requiring arbitration or for enforcing an arbitral award against a party.").

[cccLxxvii] See Arnold (n 367), 126, Contreras and Newman (n 363), Appendix (listing examples).

[cccLxxviii] Churchill v. Merthyr Tydfil County Borough Council, [2023] EWCA Civ 1416 (29 Nov. 2023).

[cccLxxix] See Merges (n 28), 1344–46 (arbitration requirements for aviation and automobile patent pools).

[cccLxxx] See Contreras and Newman (n 363), 30-32, 47-49.

[cccLxxxi] See Renata B Hesse, 'Remarks at the ITU-T Patent Roundtable: Six "Small" Proposals for SSOs Before Lunch (Oct. 10, 2012)' (10 October 2012) <https://www.justice.gov/d9/atr/speeches/attachments/2015/06/25/287855.pdf>, 10 ("Standards bodies might want to explore … devising arbitration requirements to reduce the cost of lack of clarity in F/RAND commitments"); Albert A Foer and Sandeep Vaheesan, 'Request for Joint Enforcement Guidelines on the Patent Policies of Standard Setting Organizations: Petition to the Department of Justice and Federal Trade Commission

(May 23, 2013)' <https://www.antitrustinstitute.org/wp-content/uploads/2013/05/Request-for-Joint-Enforcement-Guidelines-on-the-Patent-Policies-of-Standard-Setting-Organizations.pdf>, 17 ("SSOs should establish and require participation in dispute resolution processes that offer a quicker, more cost-effective alternative to litigation.")

[cccLxxxii] *See* Larouche, Padilla and Taffet (n 365), 584.

[cccLxxxiii] Pierre Régibeau, Raphaël De Coninck and Hans Zenger, 'Transparency, Predictability, and Efficiency of SSO-Based Standardization and SEP Licensing A Report for the European Commission' (Eur Comm 2016), 79.

[cccLxxxiv] Mark A Lemley and Carl Shapiro, 'A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents' (2013) 28 Berkeley Tech. L.J. 1135.

[cccLxxxv] *See* Geradin (n 358), 5 (unsuitability of baseball arbitration to determining FRAND royalty rates); J Gregory Sidak, 'Mandating Final-Offer Arbitration of FRAND Royalties for Standard-Essential Patents' (2014) 18 Stan. Tech. L. Rev. 1, 38 (2014) (characterizing Lemley-Shapiro proposal as a wealth transfer from SEP holders to infringers); Larouche, Padilla and Taffet (n 365) (proposal will encourage arbitral adjudication of FRAND disputes over negotiation and will increase risk of bias in decisions); Contreras and Newman (n 363), 43–44 (arbitrators' lack of a reasoned decision does little to guide future behavior, lacks transparency, will do little to make FRAND determinations more consistent, and given the dependency on party proposals, the result cannot even be assumed to be FRAND).;

[cccLxxxvi] *See, e.g.*, Contreras, 'Standards Outsiders' (n 84). (discussing the implications of SDO "outsiders"

holding SEPs); Lemley and Shapiro, 'Simple Approach' (n 384), 1153 (discussing issues relating to arbitration with unwilling implementers).

[cccxxxvii] Contreras, 'Global Rate-Setting' (n 359), 740.

[cccxxxviii] Arnold (n 367), 126-27.

[cccxxxix] Halpern (n 364), 247-48.

[cccxc] See Contreras, 'Standards Outsiders' (n 84).

[cccxci] See ibid., 516-18 (discussing SEP litigation involving SDO outsiders Rembrandt and CSIRO).

[cccxcii] One notable exception is the requirement to disclose the results of arbitration awards in other litigation. Love and Helmers have cataloged numerous significant FRAND arbitration awards, largely culled from public litigation records in other cases. Love and Helmers (n 276), 88 Table 2.

[cccxciii] *See* Peter Picht, 'Arbitration in SEP/FRAND Disputes' in Kolpschinski and McGuire (eds), *Research Handbook on Intellectual Property Rights and Arbitration* (Edward Elgar 2023).; de Werra (n 370), 361–63 ("Confidentiality is generally viewed as one of the classic reasons why parties choose arbitration.").

[cccxciv] See Barbara Lauriat, 'FRAND Arbitration Will Destroy FRAND' (2023 forthcoming) 30 Michigan Technology Law Review, MS p. 62; Halpern (n 364), 191-222; Yoonhee Kim, 'Lifting Confidentiality of FRAND Royalties in SEP Arbitration' (2014) 16 Col. Sci. & Tech. L. Rev. 1; Contreras and Newman (n 363), 40-41.

[cccxcv] Contreras and Newman (n 363), 40-41.

[cccxcvi] See ibid., 41.

[cccxcvii] 35 USC. §§ 294(a), (d).

[cccxcviii] Mark R Patterson, 'Confidentiality in Patent Dispute Resolution: Antitrust Implications' (2018) 93 Wash. L. Rev. 827, 838-39.

[cccxcix] Scott H Blackman and Rebecca M McNeill, 'Alternative Dispute Resolution in Commercial Intellectual Property Disputes' (1998) 47 American University Law Review 1709, 1714.

[cd] World Intell. Prop. Org. (n 375).

[cdi] See Michele Herman, 'Letter to Kathi Vidal, Director of US Patent & Trademark Off. Re. Joint ITA-NIST-USPTO Collaboration Initiative Regarding Standards (Docket No. PTO–T–2023–0034) (Nov. 6, 2023)', 10-11.

[cdii] Eur. Comm'n, 'SEP Proposal (2023)' (n 10).

[cdiii] ibid., 1.

[cdiv] As of June 2025, it appears that the Commission's proposal is likely to be withdrawn.

[cdv] ibid., Art. 15

[cdvi] ibid., Art. 17

[cdvii] ibid., Art. 18

[cdviii] It is currently unclear how either of these percentages would be calculated.

[cdix] Eur. Comm'n, 'SEP Proposal (2023)' (n 10). Art. 18(7).

[cdx] ibid., Art. 18(10)

[cdxi] ibid., Art. 18(9)(a)

[cdxii] ibid., Art. 18(10).

[cdxiii] ibid., Art. 18(11).

[cdxiv] ibid., Art. 18(1).

[cdxv] The Centre will recommend three conciliators from which the parties will select one or, if they cannot agree, the Centre will make the selection. Art. 39.

[cdxvi] Eur. Comm'n, 'SEP Proposal (2023)' (n 10), Arts. 38(3) and (4).

[cdxvii] Eur. Comm'n, 'Intellectual property – new framework for standard-essential patents', https://ec.europa.eu/info/law/better-regulation/have-your-

say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents_en (visited Jan. 15, 2024).

[cdxviii] See, e.g., Feedback to the Commission from: the Center for Intellectual Property (Bowman Heiden); IP Europe (Patrick McCutcheon); Mercatus Center of George Mason University; Prof. Adam Mossoff; European Patent Institute; International Center for Law & Economics (Sir Robin Jacob and Igor Nikolic); European Association of Research & Technology Organisations (EARTO). See also Baron, Commission's Draft SEP Regulation (n 339).

[cdxix] See, e.g., Feedback to the Commission from: the Public Interest Patent Law Institute; University of Skövde (Björn Lundell); University of Utah (Jorge L. Contreras); Alliance for Automotive Innovation; Free Software Foundation Europe.

[cdxx] See, e.g., Peter Georg Picht, 'Draft SEP Regulation – Coherence Issues, V.2, 7 October 2023'. and Feedback to the Commission from: Fair Standards Alliance; American Intellectual Property Law Association (AIPLA); Japan Automobile Manufacturers Association; Verband der Automobilindustrie.

[cdxxi] See Feedback to the Commission from: AFNOR, CEN-CENELEC, ETSI.

[cdxxii] Standard Essential Royalty Act (SERA) (draft, May 26, 2022), https://files.lbr.cloud/public/2022-10/SERA%20analysis.pdf?VersionId=Yv.ghJnStEzAhZ804lLS8JZkqlhLvChx

[cdxxiii] Jorge L Contreras, 'National FRAND Rate-Setting Legislation: A Cure for International Jurisdictional Competition in Standards-Essential Patent Litigation?' [2022] CPI Antitrust Chronicle., n. 41.

[cdxxiv] SERA (draft, May 26, 2022), § 331(a).

[cdxxv] ibid., § 332. Note that this definition bases the value of the claimed technology on its value before the relevant standard was adopted – the so-called "ex ante" approach applied by US courts but rejected by courts in the UK. See Section III.B.3, above.

[cdxxvi] SERA (draft, May 26, 2022), § 333(c).

[cdxxvii] ibid., § 333(c)(2).

[cdxxviii] ibid., § 333(d).

[cdxxix] ibid., § 334(a).

[cdxxx] ibid., § 334(b).

[cdxxxi] ibid., § 335.

[cdxxxii] Another proposed US bill, the Defending American Courts Act (DACA), would also have imposed penalties on parties seeking antisuit injunctions against US proceedings in foreign courts. See Contreras, 'National FRAND Rate-Setting Legislation' (n 423).

[cdxxxiii] SERA (draft, May 26, 2022), § 336(b).

[cdxxxiv] ibid., § 336(c).

[cdxxxv] ibid., § 336(e). Note that the imposition of indemnification liability on a party to a foreign proceeding mirrors the relief awarded by the US district court in Ericsson Inc. v. Samsung Elecs. Co., 2021 US Dist. LEXIS 4392 (E.D. Tex. 2020).

[cdxxxvi] See Section V.A.2.c, below.

[cdxxxvii] Lemley (n 12), 1947.

[cdxxxviii] Claudia Tapia, Industrial Property Rights, Technical Standards and Licensing Practices (FRAND) in the Telecommunications Industry (C Heymanns 2010), 165-66.

[cdxxxix] ibid., 149-58; Tim Frain, 'Patents in Standards & Interoperability' (World Intellectual Property Organization, 29 November 2006) <https://www.wipo.int/export/sites/www/meetings/en/2006/patent_colloquia/11/pdf/frain_paper.pdf>.

[cdxl] See Section V.A.2.e (Competition Law Considerations), below.

[cdxli] See Mark A Lemley, 'Ten Things to Do About Patent Holdup of Standards (and One Not To)' (2007) 48 B.C. L. Rev. 149, 161; Régibeau, De Coninck and Zenger (n 383), 84-85.; Kai-Uwe Kühn, Fiona Scott Morton and Howard Shelanski, 'Standard Setting Organizations Can Help Solve the Standard Essential Patent Licensing Problem' (2013) 3 CPI Antitrust Chron. 1, 3; Stanley M Besen, 'Why Royalties for Standard Essential Patents Should Not Be Set by the Courts' (2016) 15 Chicago-Kent J. Intell. Prop. 19.

[cdxlii] Jorge L Contreras, 'Rethinking RAND: SDO-Based Approaches to Patent Licensing Commitments' [2012] ITU Patent Roundtable, Geneva <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2159749>. See also Contreras, 'Pseudo-Pool Approach' (n 14). and Contreras, 'Aggregated Royalties' (n 347). A similar approach was recently proposed by Joachim Henkel and Taraneh Meghame, 'IP Shares: A Means to Simplify Licensing of Standard Essential Patents' [2023] Intell. Asset Mgt.

[cdxliii] European Expert Group (n 305), 105-07.

[cdxliv] ibid., 107-08. With respect to the arbitration panel, the Expert Group references the proposed FRAND Tribunal described in Contreras, 'Global Rate-Setting' (n 359). See Section III.D, below.

[cdxlv] Luke McDonagh and Enrico Bonadio, 'Standard Essential Patents and the Internet of Things - In-Depth Analysis' (European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs 2019) PE 608.854 <https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2019)608854>., 31.

[cdxlvi] European Expert Group (n 305), 168-71. See also Ruud Peters, Igor Nikolic and Bowman Heiden, 'Designing SEP Licensing Negotiation Groups to Reduce Patent Holdout in 5G/IoT Markets' in Jonathan M Barnett and Sean M O'Connor (eds), *5G and beyond: Intellectual property and competition policy in the internet of things* (Cambridge Univ Press 2024).

[cdxlvii] European Expert Group (n 305), 170.

[cdxlviii] Peters, Nikolic and Heiden (n 447), 174.

[cdxlix] See Section V.A.2, below.

[cdl] Contreras, 'Global Rate-Setting' (n 359). Though found to be less relevant, the author also considered as a model the Internet Corporation for Assigned Names and Numbers (ICANN) Uniform Dispute Resolution Procedure (UDRP). Ibid, 729-30. See also Halpern (n 364), 165-90 (extended discussion of UDRP).

[cdli] Contreras, 'Global Rate-Setting' (n 359), 738-39.

[cdlii] E.g., the SERA proposal discussed in Section IV.B, above.

[cdliii] See Contreras, 'Global Rate-Setting' (n 359), 740. See also Section III.C.3 (discussing similar considerations in the context of mandatory bilateral arbitration).

[cdliv] Ibid. 742 (citations omitted).

[cdlv] See Section II.E.

[cdlvi] For example, time, location and language of proceedings, rules surrounding timing of discovery, length and format of written submissions, oral arguments, etc.

[cdlvii] See n 365, above, and accompanying text.

[cdlviii] Herein lies a significant advantage of situating the tribunal within a recognized international arbitral body that has already developed a baseline set of procedural

rules and practices that are consistent with the requirements of the New York Convention.

[cdlix] *See* Section IV.E.2, below.

[cdlx] *See* Contreras, 'Pseudo-Pool Approach' (n 14), 82–83 (proposing apportionment penalty for over-declaration).

[cdlxi] Gil Ohana, Marc Hansen and Omar Shah, 'Disclosure and Negotiation of Licensing Terms Prior to Adoption of Industry Standards: Preventing Another Patent Ambush?' (2003) 24 Eur. Competition L. Rev. 644, 648–50 (2003); Robert A Skitol, 'Concerted Buying Power: Its Potential for Addressing the Patent Holdup Problem in Standard Setting' (2005) 72 Antitrust L.J. 727, 741–42; Lemley, 'Ten Things' (n 442),158–59.

[cdlxii] *See, e.g.,* Deborah Platt Majoras, 'Recognizing the Procompetitive Potential of Royalty Discussions in Standard Setting' (Standardization and the Law: Developing the Golden Mean for Global Trade, Stanford Law School, 23 September 2005), 8.

[cdlxiii] See Section V.A.2.d.

[cdlxiv] See U.S. Dept. Justice and Federal Trade Comm'n (n 7), 50 (reporting objections raised at hearing); Michele K Herman, 'How the Deal Is Done, Part 1' [2010] Landslide 35, 39 ("collective consideration of patent licensing issues may unacceptably delay the standards development process"); Skitol (n 462), 734 (countering objection). Contreras found that the imposition of an *ex ante* license disclosure policy at one small SDO (VITA) had no discernable negative effect on various measures of standardization efficiency or success at that SDO. Jorge L Contreras, 'Technical Standards and Ex Ante Disclosure: Results and Analysis of an Empirical Study' (2013) 53 Jurimetrics 163, 183-203.

[cdlxv] See Richard J Gilbert, 'Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations' (2011) 77 Antitrust L.J. 855, 866-68; Anne Layne-Farrar, Gerard Llobet and A Jorge Padilla, 'Preventing Patent Hold Up: An Economic Assessment of Ex Ante Licensing Negotiations in Standard Setting' (2009) 37 AIPLA Q. J. 445, 461.

[cdlxvi] Contreras, 'Ex Ante Disclosure' (n 465), 172-75.

[cdlxvii] 'Letter from Thomas O. Barnett, Assistant Attorney General, to Robert A. Skitol, Esq., Dated Oct. 30, 2006'.

[cdlxviii] 'Letter from Thomas O. Barnett, Assistant Attorney General, U.S. Dept. of Justice to Michael A. Lindsay, Partner, Dorsey & Whitney LLP (Apr. 30, 2007) (IEEE Letter)'.

[cdlxix] See Contreras, 'Ex Ante Disclosure' (n 465), 175-76.

[cdlxx] ibid., 176-77.

[cdlxxi] ibid., 181-82.

[cdlxxii] The selected standards include 3GPP Long Term Evolution (LTE), IEEE 802.16M, IEEE 802.20, and 3GPP2 Ultra Mobile Broadband. See ibid., 178; Tapia (n 439), 194.

[cdlxxiii] Tapia (n 439), 194.

[cdlxxiv] See Love and Helmers (n 276), 89-92, Table 3; Jorge L Contreras, 'Patent Pledges' (2015) 47 Arizona St. L.J. 543, 559-61, Table 4 (companies disclosing 2G, 3G and 4G rates); Ruud Peters, Fabian Hoffman and Nikolaus Thumm, 'How to Create a Smoother SEP Licensing Ecosystem for IoT' in Jonathan M Barnett and Sean M O'Connor (eds), *5G and beyond: Intellectual property and competition policy in the internet of things*

(Cambridge Univ Press 2024), 188 (companies disclosing 5G rates).

[cdlxxv] European Expert Group (n 305), 102.

[cdlxxvi] Peters, Hoffman and Thumm (n 475), 187.

[cdlxxvii] ibid., 188.

[cdlxxviii] See n 474, above, and accompanying text.

[cdlxxix] Love and Helmers (n 276), 66.

[cdlxxx] Interdigital Technology Corporation v Lenovo Group Limited [2023] EWHC 539, ¶ 555.

[cdlxxxi] Josh Lerner and Jean Tirole, 'Standard-Essential Patents' (2015) 123 J. Political Econ. 547, 550.

[cdlxxxii] ibid.

[cdlxxxiii] Régibeau, De Coninck and Zenger (n 383), 84.

[cdlxxxiv] European Expert Group (n 305), 101-02.

[cdlxxxv] Jorge L Contreras and Richard J Gilbert, 'Non-Discrimination: FRAND's Last Stand?' [2020] CPI Antitrust Chron.

[cdlxxxvi] UK Competition & Markets Authority (n 2), ¶ 9.42.

[cdlxxxvii] Definitions of "essential" vary, sometimes significantly, from SDO to SDO. See Jorge L Contreras, 'Essentiality and Standards-Essential Patents' in Jorge L Contreras (ed), *Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents* (Cambridge Univ Press 2017), 217-19 (discussing distinctions between "technical" and "commercial" essentiality).

[cdlxxxviii] ibid., 224-25 (collecting statistics).

[cdlxxxix] Mark A Lemley and Timothy Simcoe, 'How Essential Are Standard-Essential Patents?' (2019) 104 Cornell L. Rev. 607.

[cdxc] Rudi Bekkers and others, 'Overcoming Inefficiencies in Patent Licensing: A Method to Assess

Patent Essentiality for Technical Standards' (2022) 51 Research Pol. 104590; European Expert Group (n 305), 55-68; Peters, Hoffman and Thumm (n 475); 179-82.

[cdxci] See Mallinson, Discovering (n 339), 23; Justus Baron, 'Essentiality Checks for Potential SEPs: A Framework for Assessing the Impact of Different Policy Options' Eur. Comm'n (2023).

[cdxcii] Complementary technologies are those that are independently required in order to achieve a stated purpose, such as compliance with a particular standard. *See* Richard J Gilbert, 'Ties That Bind: Policies to Promote (Good) Patent Pools' (2010) 77 Antitrust L.J. 1.

[cdxciii] Merges and Mattioli (n 265); Régibeau, De Coninck and Zenger (n 383), 58-59.

[cdxciv] Merges and Mattioli (n 265).

[cdxcv] Ericsson's Redacted Trial Brief, TCL Communication Tech. Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson (C.D. Cal. 2017).

[cdxcvi] Régibeau, De Coninck and Zenger (n 383), 59.

[cdxcvii] Contreras, 'Essentiality and Standards-Essential Patents' (n 488), 215.

[cdxcviii] Eur. Comm'n, 'SEP Proposal (2023)' (n 10), 7.

[cdxcix] ibid., Art. 29(5)-(6).

[d] Ibid, Art. 28(2).

[di] Ibid, Art. 29(2).

[dii] Ibid, Art. 30(1).

[diii] Ibid, Art. 32.

[div] Ibid, Art. 31(1).

[dv] Ibid, Art. 31(5).

[dvi] See Jorge L Contreras, 'The European Commission's Proposed SEP Regulation – A Missed

Opportunity for Meaningful Reform?' (2023) 2023 CPI TechREG Chronicle 1, 12-13.

[dvii] Rudi Bekkers and others, 'Pilot Study for Essentiality Assessment of Standard Essential Patents' [2020] Report for the Eur. Comm. Joint Res. Centre EUR 30111 EN, 52-53.

[dviii] Japan Patent Office, 'Manual of "Hantei" (Advisory Opinion) for Essentiality Check (Rev. Ed. Jun. 2019)' <https://www.jpo.go.jp/e/system/trial_appeal/document/hantei_hyojun/manual-of-hantei.pdf>.

[dix] ibid., 4 ("Such opinion functions merely as an expert opinion, without any legally binding force. However, because such opinion is expressed by the JPO, where highly specialized and technical administrative officers are involved, it is considered that the opinion is deemed as one of the determinations which are socially respected and authoritative.")

[dx] ibid., 3.

[dxi] Bekkers and others (n 508), 52.

[dxii] ibid.

[dxiii] ibid., 54.

[dxiv] See generally Christopher B Seaman, 'Presumption of Validity' in Peter S Menell and David L Schwartz (eds), *Research Handbook on the Economics of Intellectual Property Law, Vol. II – Analytical Methods* (Edward Elgar 2019), 350, 357-58 (collecting US studies of patent validity); Katrin Cremers and others, 'Patent Litigation in Europe' (2016) 44 European Journal of Law & Economics 1, 28 Table 6 (patent validity data from Germany, France, Netherlands and UK); Joachim Henkel and Hans Zischka, 'How Many Patents Are Truly Valid? Extent, Causes, and Remedies for Latent Patent

Invalidity' (2019) 48 European Journal of Law & Economics 195 (data from Germany).

[dxv] Lemley and Simcoe (n 490), 627.

[dxvi] European Expert Group (n 305), 69-70.

[dxvii] ibid., 70.

[dxviii] The European Expert Group's suggestions described in Paragraphs (2) and (4) are reiterated by Peters, Hoffman and Thumm (n 475), 183-85.

[dxix] Martin Schaefer and Christian Czychowski, 'Wer bestimmt, das FRAND ist? - Ein Blick u¨ber den patentrechtlichen Tellerrand' (2018) GRUR, 582 (because this article is in German, the discussion in this Report is based on the summary contained in Rui Li and Axel Contreras, 'Are Collecting Agencies a Model That Fits to SEP Licensing?' (2021) 16 Journal of Intellectual Property Law & Practice 1109, 1111-12.)

[dxx] See n 55 and accompanying text.

[dxxi] See discussion of pools for SEPs at Section III.A.1.

[dxxii] Li and Contreras (n 520), 1112; Ada Sofie Altobelli, 'GEMA Type Agencies as a Solution for FRAND? Report from the Munich IP DIspute Resolution Forum, Nov. 12, 2019' <https://www.ipdr-forum.org/events/gema-type-frand-agencies/>.

[dxxiii] Li and Contreras (n 520), 1114.

[dxxiv] Daniel G. Swanson and William J. Baumol, 'Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power' (2005) 73 *Antitrust L.J.* 1.

[dxxv] *Id*. at 13.

[dxxvi] Despite its theoretical appeal, the Swanson-Baumol auction approach is not generally viewed as a solution that could practically be adopted in the current standard-setting environment. *See, e.g.*, Farrell and others (n 302), 635 (questioning the practicality of such an auction process) and Layne-Farrar, Llobet and Padilla (n 466), 451-52 ("the

practical challenges of designing, organizing, and implementing such an auction likely rule out this method for anything more than hindsight-assisted thought experiments").

[dxxvii] Lemley, 'Ten Things' (n 442), 160.

[dxxviii] See Jorge L Contreras, Intellectual Property Licensing and Transactions: Theory and Practice (Cambridge Univ Press 2022), 224-25.

[dxxix] Lemley, 'Ten Things' (n 442), 161.

[dxxx] Marc Rysman and Timothy Simcoe, 'A NAASTy Alternative to RAND Pricing Commitments' (2011) 35 Telecommunications Policy 1010, 1011.

[dxxxi] Gunther Friedl and Christoph Ann, 'A Cost-Based Approach for Calculating Royalties for Standard-Essential Patents (SEPs)' (2018) 21 Journal of World Intellectual Property 369.

[dxxxii] Vringo Infrastructure, Inc. v. ZTE (UK) Ltd. [2013] EWHC (Pat) 1591 [35] (Birss J). Lord Justice Birss once chaired the UK Copyright Tribunal. Beverly Barton, *An Interview with Mr Justice Birss: Part 1/3: Getting Personal*, THOMPSON REUTERS: DISPUTE RESOLUTION BLOG (Apr. 7, 2016), http://disputeresolutionblog.practicallaw.com/an-interview-with-mr-justice-birss-part-13-getting-personal/.

[dxxxiii] TQ Delta, LLC v Zyxel Commc'ns UK Ltd. [2019] EWHC (Pat) 353 [22] (Carr J). Mr. Justice Carr goes on to discuss several similarities between FRAND rate determinations and the determinations of the U.K. Copyright Tribunal. *Id.* at [24]–[25].

[dxxxiv] Tim Wu, 'Copyright's Communications Policy' (2004) 103 Michigan Law Review 278, 325.

[dxxxv] See, e.g., Mallinson, Discovering (n 339), 3 ("Misguided legislative proposals are based on poorly supported and dubious assertions that there is insufficient transparency in royalty rates and that rates offered by

some licensors are supra-FRAND … [T]o instead set rates anew will harmfully upset what has been proven to work well with no sign of market failure. Proposed legislative changes are attempting to abandon or diminish well-established market-based mechanisms in determining royalty charges.") and 12 ("It is fanciful to believe that sub-contracting to a slew of economic, technical, and other kinds of experts to make up aggregate royalty values will produce better, fairer, or truer rates than those derived in market-based rates negotiated in bilateral licenses…").

[dxxxvi] See Section V.C.5, below.

[dxxxvii] See Section III.C.1.

[dxxxviii] Justus Baron and others, 'Making the Rules: The Governance of Standard Development Organizations and Their Policies on Intellectual Property Rights' in Nikolaus Thumm (ed), *JRC Science for Policy Report, EUR 29655* (2019), 99.

[dxxxix] This Section does not purport to offer legal advice regarding the competition laws of the UK or other jurisdictions and is provided for background and informational purposes only.

[dxl] See Case 13/77 SA G.B.-INNO-B.M. v Association des détaillants en tabac (ATAB) [1977] E.C.R. 2115, EU:C:1977:185 (challenge to Belgian legislation affecting competition in market for tobacco products).

[dxli] See Case 123/83 Bureau national interprofessionnel du cognac v Guy Clair [1985] E.C.R. 391, EU:C:1985:33, para 22 ("By its very nature, an agreement fixing a minimum price for a product which is submitted to the public authorities for the purpose of obtaining approval for that minimum price, so that it

becomes binding on all traders on the market in question, is intended to distort competition on that market.")

[dxlii] See Case 5/79 Procureur général v Hans Buys, Han Pesch and Yves Dullieux and Denkavit France SARL [1979] E.C.R. 3203, EU:C:1979:238 (national rules fixing product prices cannot be regarded as an agreement between undertakings that violates Article 101.) See also Case 188/86 Ministère Public v Lefèvre [1987] E.C.R. 2963, EU:C:1987:327.

[dxliii] Regulation 717/2007 on roaming on public mobile telephone networks within the Community [2007] O.J. L 171/32.

[dxliv] R. (on the application of Telefonica O2 Europe Plc) v Secretary of State for Business, Enterprise and Regulatory Reform [2007] EWHC 3018 (Admin), ¶ 8.

[dxlv] Case C-58/08 Vodafone Ltd and Others v. Secretary of State for Business Enterprise and Regulatory Reform [2010] ECR I-4999, EU:C:2010:321, ¶ 38.

[dxlvi] Id. ¶ 40.

[dxlvii] Id. ¶ 45-46.

[dxlviii] Id. ¶ 47.

[dxlix] Rt Hon Lady Rose of Colmworth DBE, 'When Government Sets Prices: What Can History Teach Us? The 23rd Burrell Lecture, Competition Law Assn., Nov. 28, 2022'. ¶ 48.

[dl] In re Yarn Spinners' Agreement [1959] 1 All E.R. 299 (RPCt). (discussed at Colmworth, n. 550, ¶ 48).

[dli] Eastern Railroad Presidents Conference, et al v Noerr Motor Freight, Inc (1960) U.S. 365 127 (US), 136.

[dlii] *Parker v Brown* (1943) 371 US 341 (US), 350-52 (nothing in the language of the Sherman Act or in its history suggested that Congress intended to restrict the

sovereign capacity of the States to regulate their economies).

[dliii] Katarzyna Czapracka, Intellectual Property and the Limits of Antitrust: A Comparative Study of US and EU Approaches (Edward Elgar 2009), 31-34.

[dliv] *Noerr* (n 552), 136.

[dlv] Am. Bar Assn. Sec. of Antitrust Law, *Handbook on Antitrust Aspects of Standard Setting* (2nd edn, ABA Publishing 2011), 160-61.

[dlvi] ibid., 162-65 (discussing *In re Union Oil Co of California (UNOCAL)* (2004) 138 FTC 1 (Fed Trade Comm'n).)

[dlvii] Am. Bar Assn. Sec. of Antitrust Law (n 564), 159-60 (discussing *Allied Tube & Conduit Corp v Indian Head, Inc* (1988) 486 US 492 (US)).

[dlviii] See *E. & J. Gallo Winery v. EnCana Corp*., 503 F.3d 1027, 1033-35 (9th Cir. 2007).

[dlix] ibid.

[dlx] Kintner and others (n 45), § 66.3[C][1].

[dlxi] ibid.

[dlxii] 62 Stat. 472, 49 U.S.C. § 5b (1948).

[dlxiii] Vera Korzun, 'Arbitrating Antitrust Claims: From Suspicion to Trust' (2016) 48 NYU Journal of International Law & Politics 867, 916-19.

[dlxiv] Baxter Intern, Inc. v. Abbott Laboratories, 315 F.3d 829, 832 (7th Cir. 2003).

[dlxv] Genentech Inc. v Hoechst GmbH, CJEU, 7 Jul 2016, C-567/14. See also Korzun (n 572), 917-18 (providing background of case). The Court ruled that "Article 101(1) TFEU must be interpreted as not precluding the imposition on the licensee, under a licence agreement … of a requirement to pay a royalty for the use of a patented technology for the entire period in which that agreement was in effect, in the event of the

revocation or non-infringement of a licenced patent, provided that the licensee was able freely to terminate that agreement by giving reasonable notice."

[dlxvi] *See* Patterson (n 398).

[dlxvii] *See, e.g.,* Gilbert, 'Ties that Bind' (n 493), 18-25. Igor Nikolic, 'Licensing Negotiation Groups for SEPs: Collusive Technology Buyers Arrangements? Their Pitfalls and Reasonable Alternatives' (2021) 56 Les Nouvelles 350, 355-57 (proposing pool rate-setting involving input from standards implementers).

[dlxviii] Eur. Comm'n, 'Guidelines on the Application of Article 101 of the Treaty on the Functioning of the European Union to Technology Transfer Agreements, 2014 O.J. (C 89/03)', ¶ 245.

[dlxix] UK Competition & Markets Authority (n 2), 207 n. 405.

[dlxx] U.S. Dept. Justice and U.S. Federal Trade Comm'n, 'Antitrust Guidelines for the Licensing of Intellectual Property' (2017), 71 § 5.5.

[dlxxi] U.S. Dept. Justice and Federal Trade Comm'n (n 7), 68-85.

[dlxxii] See ibid., 68-85; Eur. Comm'n, 'EC Article 101 Guidelines on Technology Transfer Agreements (2014)' (n 569), ¶¶ 248-273.

[dlxxiii] Contreras, Intellectual Property Licensing and Transactions: Theory and Practice (n 529), 906.

[dlxxiv] U.S. Dept. Justice and U.S. Federal Trade Comm'n, 'Licensing Guidelines' (n 571), § 5.5.

[dlxxv] Eur. Comm'n, 'Guidelines on Technology Transfer Agreements (2014)' (n 569), ¶ 261(a).

[dlxxvi] U.S. Dept. Justice and Federal Trade Comm'n, 'Antitrust and IP' (n 7), 82.

[dlxxvii] ibid. 82-83.

[dlxxviii] Eur. Comm'n, 'Guidelines on Technology Transfer Agreements (2014)' (n 569)', ¶ 269.

[dlxxix] See Herman (n 472), 38; J Gregory Sidak, 'Patent Holdup and Oligopsonistic Collusion in Standard-Setting Organizations' (2009) 5 J. Comp. L. & Econ. 123.

[dlxxx] Teece (n 347), 166.

[dlxxxi] Angel Tradacete Cocera, 'Letter to Karl Heinz Rosenbrock, Director General ETSI, June 21, 2006'. (preferring "pure" ex ante disclosures of royalty terms, which would enable price competition among competing patented technologies.) The conduct about which the Commission expressed concern in 2006 differs from the aggregate rate determination proposal currently before the European Union inasmuch as the current proposal involves aggregate rate determination by a governmental agency (EUIPO) rather than a group of private firms. See Section IV.A.1, above (discussing EU Proposal).

[dlxxxii] UK Competition & Markets Authority (n 2), ¶ 9.13.

[dlxxxiii] Ibid., 207 n. 405.

[dlxxxiv] See n 333.

[dlxxxv] See Nicolas Petit, 'The IEEE-SA Revised Patent Policy and Its Definition of "Reasonable" Rates: A Transatlantic Antitrust Divide?' (2017) 27 Fordham Intellectual Property, Media and Entertainment Law Journal 210; Marco Lo Bue, 'Are These Cartels? Price Guidelines Adopted by Standard Setting Organisations (US, Institute of Electrical and Electronics Engineers)' (2016) 7 Journal of European Competition Law & Practice 537; Nicolo Zingales and Olia Kanevskaia, 'The IEEE-SA Patent Policy Update under the Lens of EU Competition Law' (2016) 12 European Competition Journal 195.

[dlxxxvi] European Expert Group (n 305), 168-71.

[dlxxxvii] Peters, Nikolic and Heiden (n 447), 174 ("it remains an empirical question whether LNGs can be designed to address antitrust concerns"); Nikolic (n 568),

354 ("the LNG proposal would likely lead to anti-competitive buyers' collusion").

[dlxxxviii] 62 Stat. 472, 49 U.S.C. § 5b (1948).

[dlxxxix] Jerman and Anderson (n 40), 21.

[dxc] Popper, 'Antitrust Immunity' (n 41), 26.

[dxci] See Section II.C, above.

[dxcii] U.S. Dept. Justice and Federal Trade Comm'n (n 7), 52-53. See also Contreras, 'Global Rate-Setting' (n 359), 752-53 n. 236 (collecting and summarizing scholarly commentary).

[dxciii] Sidak, 'Oligopsonistic Collusion' (n 580), 142–51. See also Peters, Nikolic and Heiden (n 447), 157, 160-62; Nikolic (n 568), 355-57.

[dxciv] *See* Gilbert, 'Deal or No Deal' (n 466), 866-68 ("ex ante joint negotiations are likely to result in royalties per firm that are lower than the royalties that most, if not all, licensees would pay with bilateral bargaining"); Layne-Farrar, Llobet and Padilla (n 466), 461 ("with joint ex ante negotiations the patent holder will generally be under-rewarded).

[dxcv] Michael A Carrier, Innovation for the 21st Century: Harnessing the Power of Intellectual Property and Antitrust Law (Oxford Univ Press 2009), 337-38.

[dxcvi] Contreras, 'Aggregated Royalties' (n 347), 707-08.

[dxcvii] U.S. Dept. Justice and Federal Trade Comm'n (n 7), 55.

[dxcviii] ibid., 52.

[dxcix] ibid., 55.

[dc] ibid., 53.

[dci] Makan Delrahim, 'Take It to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law – Remarks as Prepared for Delivery at the USC Gould School of Law' <https://www.justice.gov/opa/speech/file/1010746/download>, 10 (citing Sidak, 'Oligopsonistic Collusion' (n 580))

[dcii] Contreras, 'Aggregated Royalties' (n 347), 708.

[dciii] Peters, Nikolic and Heiden (n 447), 167-69. See also Alliance for Automotive Innovation, 'Comments on the European Commission's Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU) 2017/1001' (Aug. 10, 2023), 2 (proposing such a safe harbor).

[dciv] See Mohammed Ataul Karim, 'The Proposed EU SEP Regulation: Checking Balancing Incentives, and Compatibility with EU Fundamental Rights, and the TRIPS Regime' [2023] 4iP Council <https://www.4ipcouncil.com/application/files/9816/8847/8735/2023.07.04_final_Draft_SEP_Regulation_paper_.pdf>; Am. Intell. Prop. Law Assn., 'Comments on The Proposal for SEP Regulation Published on April 27, 2023 (Aug. 10, 2023)' <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents/F3434456_en>.

[dcv] Eur. Comm'n, 'SEP Proposal (2023)' (n 10), Art. 24(1).

[dcvi] ibid, Art. 56(4).

[dcvii] Eur. Comm'n, 'Commission Staff Working Document Impact Assessment Report Accompanying the Document Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU) 2017/1001 (SWD(2023 124 Final) (Apr. 27, 2023)', 48.

[dcviii] See, e.g., Martin Husovec, 'A Human Right to Ever-Stronger Protection?' (2023) 54 International Review of Intellectual Property and Competition Law 1483.; Enrico Bonadio, 'Countering Criticisms to the Proposed EU SEPs Regulation' (*Kluwer Patent Blog*, 27

November 2023) <https://patentblog.kluweriplaw.com/2023/11/27/countering-criticisms-to-the-proposed-eu-seps-regulation/>.

[dcix] Am. Intell. Prop. Law Assn. (n 605), 4-6; Karim (n 605), 6-14.

[dcx] First Written Submission by the European Union, 'China – Enforcement of Intellectual Property Rights' (DS611) (June 8, 2023), ¶¶ 372-375.

[dcxi] Eur. Comm'n, 'EC Impact Assessment Report (2023)' (n 608), 56-57.

[dcxii] See n 31, above, and accompanying text.

[dcxiii] See Noti-Victor (n 143) (cited throughout Section II.D.3.e).

[dcxiv] See Stern (n 274), 249-50 (cited in Section III.B.3).

[dcxv] See Section V.B.8, below (discussing aggregate rate allocation).

[dcxvi] See Sections IV.E.2 (essentiality checking) and IV.E.3 (validity challenges).

[dcxvii] See Section II.E (US PRO rate court).

[dcxviii] For purposes of this Report, the ability to appeal a governmental rate determination exists when the statutory framework for the rate determination expressly contemplates appeal to higher agency authority or to specified courts. The right to appeal is not indicated by an ability of parties to challenge a governmental or private rate-setting result on generally applicable administrative or antitrust law grounds. Rate decisions by lower courts (e.g., the PRO rates or interpleader actions) are inherently subject to appeal, and thus listed as having an appeal mechanism.

[dcxix] See Japan Patent Office, 'Guide to Hantei (Advisory Opinion) System (Ref. Dec. 2020)', 5.

[dcxx] See Section IV.E.2.c, above.

[dcxxi] See Contreras, ‘Proposed SEP Regulation’ (n 507), 5-6.

[dcxxii] ibid.

[dcxxiii] See sources cited in n 367.

[dcxxiv] See sources cited in nn 293-294.

[dcxxv] See Nicolò Galli and others, ‘Robert Schuman Centre Working Paper: Position Statement on the European Commission’s Proposal for a SEPs Regulation (RSC 2023/51)’, 14; European Patent Institute, ‘Comments on the Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU)2017/1001, 27th April 2023’. Contreras, ‘Proposed SEP Regulation’ (n 507), 5, 7.

[dcxxvi] See, e.g., nn 153 and 156, above, and accompanying text.

[dcxxvii] See n 148, above, and accompanying text (discussing value of a radio broadcast contributed by the radio station versus the owner of the copyright in the broadcast content). Sidak and Skog propose a hedonic pricing model to identify the value of a patented feature of a product. Sidak and Skog (n 357), 611 (“One identifies the patent's value by comparing the prices and features among similar products to determine the specific contribution of the patented technology to the overall value of the infringing product, thus revealing the value that the patent adds to the price that consumers actually pay for the infringing product … Thus, one can account for and measure the value that consumers attach to each qualitative component, even if the mix of components changes.”)

[dcxxviii] See n 70, above, and accompanying text.

[dcxxix] See n 195, above, and accompanying text.

[dcxxx] See nn 158-159, above, and accompanying text.

[dcxxxi] See Section III.B.4.

[dcxxxii] See nn 207-211, above, and accompanying text.

[dcxxxiii] See n 532, above, and accompanying text (discussing Friedl and Ann cost-based pricing proposal for SEPs).

[dcxxxiv] See *In re Innovatio IP Ventures, LLC* (n 279) (discussed in n 349, above, and accompanying text).

[dcxxxv] See Bartlett and Contreras (n 252), 295-300.

[dcxxxvi] See Christopher B Seaman and others, 'Lost Profits and Disgorgement' in Biddle, C. Bradford and others (eds), *Patent Remedies and Complex Products: Toward a Global Consensus* (Cambridge Univ Press 2019), 72-80.

[dcxxxvii] See Michael A Lindsay and Konstantinos Karachalios, 'Updating a Patent Policy: The IEEE Experience' [2015] CPI Antitrust Chronicle 1.

[dcxxxviii] See Jorge L Contreras, 'Sometimes FRAND Does Mean License-to-All' [2020] Intell. Asset Mgt. <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3889813> (discussing contradictory "recollections" of the meaning of ETSI's IPR policy with respect to discrimination against implementers at different levels of the production chain), Jorge L Contreras, 'From Private Ordering to Public Law: The Legal Framework Governing Standards-Essential Patents' (2017) 30 Harv. J. L. & Tech. 211, 291 (discussing *Rambus v. Infineon* and *Qualcomm v. Broadcom*, in which courts relied on evidence from SDO participants to interpret the requirements of SDO policies).

[dcxxxix] See, e.g., *Unwired Planet (EWHC)* (n 311), ¶¶ 103-146 (analyzing French law as presented by

parties' experts) and Apple, Inc. v. Motorola Mobility, Inc., 886 F.Supp.2d 1061, 1083 (W.D. Wis. 2012) (analysis of French law).

[dcxl] This approach echoes that of the earlier proposed Global Rate-Setting Tribunal. See Contreras, 'Global Rate-Setting' (n 359), 750 (authorizing the Tribunal, in the exercise of its expert discretion, to "utilize any reasonable methodology to determine" FRAND rates, rate schedules and allocations among SEP holders).

[dcxli] IEEE Standards Assn., IEEE SA Standards Board Bylaws (2023), § 6.1 (Definitions).

[dcxlii] See n 136, above, and accompanying text.

[dcxliii] 17 USC. § 115(c)(1)(F).

[dcxliv] See Noti-Victor (n 143).1793-94.

[dcxlv] See Section II.G.1 (Medicare rate-setting considerations).

[dcxlvi] See Contreras, 'Proposed SEP Regulation' (n 507), 5 (noting omission).

[dcxlvii] Contreras, 'Global Rate-Setting' (n 359), 450 (proposing presumptive numerical proportionality allocation, with opportunity to rebut presumption upon strong showing of evidence).

[dcxlviii] EE Standards Ass'n, IEEE-SA Standards Board Operations Manual § 6.2 (2023). Note that this provision was amended in 2023 following its initial adoption, in a broader form, in 2015.

[dcxlix] Summary of Commission Decision of 29 April 2014 relating to a proceeding under Article 102 of the Treaty on the functioning of the European Union and Article 54 of the EEA Agreement (Case AT.39939 — Samsung — Enforcement of UMTS standard essential patents) (2014/C 350/08).

[dcl] In its 2013 consent decree with Google and Motorola, the SEP holders are prohibited from seeking

injunctive relief against implementers during a 6-month period when they must seek to negotiate a FRAND license. Decision and Order, Motorola Mobility LLC, FTC Docket No. C-4410 (July 23, 2013). A similar outcome was reached in the FTC's consent decree with Robert Bosch. Statement of the Fed. Trade Comm'n, Robert Bosch GmbH, FTC File No. 121-0081 (Nov. 26, 2012).

[dcli] See Section V.A.3, above (constitutional and treaty challenges to Proposal).

[dclii] See, e.g., Breyer (n 19), 343 ("developing a meaningful set of standards [for regulatory appointees] is close to impossible").

[dcliii] Art. 26(5)(a).

[dcliv] 17 U.S.C. § 802(a)(1).

[dclv] See Mallinson, Discovering (n 339), 12; Breyer (n 19), 343 ("as long as the president appoints and the Senate confirms, the appointment process will remain political").

[dclvi] FTC Commissioners include three (including the Chair) from the administration's party and two from the other party; ITC Commissioners are evenly split between the two parties, with a rotating chair.

[dclvii] ICSID Convention, Art. 39.

[dclviii] Ibid. Art. 14(1).

[dclix] See Justus Baron, Jorge L Contreras and Pierre Larouche, 'Balance and Standardization: Implications for Competition and Antitrust Analysis' (2022) 84 Antitrust L.J. 425.

[dclx] See Section II.E.3.a (discussing Code of Conduct for United States Judges).

[dclxi] See n 27, above, and accompanying text.

[dclxii] For example, certain documents, such as license agreements covering both SEPs and other intellectual property rights and non-standardized

technologies, may have legitimate claims to some degree of confidentiality. It should be up to the tribunal to fashion reasonable rules regarding the protection of confidential information adduced during its proceedings.

[dclxiii] Japan Patent Office, 'Hantei Manual' (n 509), 3-4.

[dclxiv] This lack of transparency is one of the bases for the EU's WTO complaint against China. First Written Submission by the European Union (n 611).

[dclxv] Eur. Comm'n, 'SEP Proposal (2023)' (n 10). Art. 18(13).

[dclxvi] ibid. Arts. 57(2)(d) and 58(1). For a critique, see Contreras, 'Proposed SEP Regulation' (n 507), 6.

[dclxvii] See Baron, Contreras and Larouche (n 671).

[dclxviii] See Section II.F.4

[dclxix] See Section II.D.3.e, below (describing CRB proceedings and volume of evidence).

[dclxx] Japan Patent Office, 'Hantei Guide (2020)' (n 620), 3.

[dclxxi] Eur. Comm'n, 'SEP Proposal (2023)' (n 10), Art. 31(5).

[dclxxii] ibid., Art. 18(10).

[dclxxiii] ibid., Art. 37(1).

[dclxxiv] Contreras, 'Global Rate-Setting' (n 359), 746.

[dclxxv] See Timothy P Harkness and others, *Discovery in International Civil Litigation: A Guide for Judges* (Federal Judicial Center 2015), App. A (Discovery Practices in Selected Jurisdictions).

[dclxxvi] See nn 110-113, above, and accompanying text (CRB discovery rules).

[dclxxvii] 17 U.S.C. § 803(b)(6)(C)(ix). But see n 118, above (unlikelihood that this power will be exercised).

[dclxxviii] Born (n 376), 469-513 and n. 373, above, and accompanying text.

[dclxxix] Harlon Leigh Dalton, 'Taking the Right to Appeal (More or Less) Seriously' (1985) 95 Yale Law Journal 62.

[dclxxx] See Baron and others, 'Making the Rules' (n 539), 110-11; Am. Natl. Standards Inst., ANSI, ANSI Essential Requirements: Due Process Requirements for American National Standards 4 (2019); Standards Development Organization Advancement Act of 2004, Pub. L. No. 108-237 (2004) (codified at 15 U.S.C. §§ 4301–4306); ISO/IEC Guide 59:1994 – Code of Good Practice for Standardization (1993).

[dclxxxi] See Section V.A.2.a (Competition Law and Governmental Rate-Setting).

[dclxxxii] Born (n 376), 795-96.

[dclxxxiii] Lauriat (n 394), MS 49-58.

[dclxxxiv] Kent H Barnett and Lindsay Vinson, 'Chevron Abroad' (2020) 96 Notre Dame Law Review 621, 622.

[dclxxxv] Notably, the *Chevron* standard in the United States, under which federal agencies are given significant deference in their areas of competency, was recently rejected by the U.S. Supreme Court. See *Loper Bright Enterprises v. Raimondo* and *Relentless v. Department of Commerce*, 603 U.S. 369 (2024).

[dclxxxvi] Associated Provincial Picture Houses Ltd. v. Wednesbury Corp. [1947] 1 KB 223, 234.

[dclxxxvii] Phonographic Performance Ltd v Virgin Retail Ltd [2001] EMLR 6, ¶ 14.

[dclxxxviii] UK Intell. Prop. Off. (n 57), ¶ 11.5.

[dclxxxix] See supra notes 45 ("if FERC's findings of facts are supported by substantial evidence, they must be taken as conclusive"), and 127-134 and accompanying text (courts are deferential to Copyright Royalty Board determinations, resulting in few appeals).

[dcxc] See n 125, above, and accompanying text.

[dcxci] Christopher R Drahozal and Stephen J Ware, 'Why Do Businesses Use (or Not Use) Arbitration Clauses' (2010) 25 Ohio St. J. Dispute Resolution 433, 447-49.

[dcxcii] See n 494, above.

[dcxciii] See sources cited in n 491, above.

[dcxciv] Japan Patent Office, 'Hantei Guide (2020)' (n 620), 3.

[dcxcv] See Section III.D.3.

[dcxcvi] For example, the fee for filing a pre-merger notification with the US Federal Trade Commission in a transaction valued at $5 billion or more is $2.25 million. US Fed. Trade Comm'n, Filing Fee Information, https://www.ftc.gov/enforcement/premerger-notification-program/filing-fee-information, visited Jan. 10, 2024.

[dcxcvii] See Section II.D.2.

[dcxcviii] See Section II.B.

[dcxcix] See Section II.D.2 (Evolution of Copyright Rate-Setting Authority).

[dcc] See Section II.D.4 (CRB Utilization).

[dcci] See n 197 (listing proceedings).

Concept House
Cardiff Road
Newport
NP10 8QQ

Tel: 0300 300 2000
Email: information@ipo.gov.uk
Web: www.gov.uk/ipo

X: @The_IPO
Facebook: Intellectual Property Office UK
YouTube: Intellectual Property Office UK
LinkedIn: Intellectual Property Office UK

For copies in alternative formats please contact our Customer Support Centre.

When you no longer need this booklet, please recycle it.

Published: July 2025

CP 2502585