

The Commission’s Draft SEP Regulation – Focus on Proposed Mechanisms for the Determination of “Reasonable Aggregate Royalties”

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Introduction

Background: On 27 April 2023, the European Commission published its “Proposal for a regulation of the European Parliament and of the Council on standard essential patents [SEPs] and amending Regulation (EU) 2017/1001” [‘Draft Regulation’].

The Draft Regulation, if adopted, will make sweeping changes to the SEP licensing framework. The proposal requires owners of potential SEPs (‘SEP holders’) seeking to license their SEPs for royalty to register their patents in a SEP register. From this register, samples are to be drawn for independent essentiality evaluations. The Draft Regulation furthermore creates a conciliation process for negotiating parties to agree on “fair, reasonable, and non-discriminatory” (FRAND) terms and conditions for SEP licences. While the outcome is non-binding, the conciliation is a precondition for parties of SEP licensing negotiations to initiate litigation. Another aspect of the proposal is that SEP holders are invited to agree on a ‘reasonable aggregate royalty’ for a standard. The proposal also foresees a potential intervention of a conciliator and/or a panel of experts in the determination of this aggregate royalty.

The proposal was accompanied by an impact assessment report, which concludes that the benefits of the Draft Regulation outweigh the costs. For its impact assessment, the Commission relied on a variety of inputs, including two studies produced for the Commission by a consortium of researchers including myself (Baron et al., 2023; Baron, 2023). The first of these studies (Baron et al., 2023) provides an empirical assessment of current SEP licensing conditions. The assessment found no conclusive evidence that current SEP licensing produces adverse effects on social welfare. The second study (Baron, 2023) provides an impact assessment of different policy options regarding essentiality checks. In this study, I concluded that different policy options have the potential to produce benefits outweighing the costs within the current

¹ I am thankful to 4ip Council for financial support for this paper. All opinions expressed in this paper are my own. The analyses presented in this paper have been prepared after the publication of the Commission’s Draft SEP Regulation and the Impact Assessment Support Studies to which I contributed. Therefore, the arguments in this paper are not related to any work that I have carried out to support the European Commission in its Impact Assessment.

SEP licensing framework. In other words, essentiality checks may produce a positive impact in the absence of significant changes to the process of SEP licensing and FRAND determination.

In this paper, I focus on the suggested mechanisms for the determination of a *reasonable aggregate royalty* (articles 15-18 of the Draft Regulation). There has been relatively little formal analysis supporting the Commission's proposals for the determination of an aggregate royalty. There is thus an urgent need for the legislative bodies of the EU to scrutinise this aspect of the Draft Regulation.

There has been a longstanding debate in the economic literature on the 'royalty stacking' theory.² According to this theory, SEP licensing terms determined independently of each other through bilateral negotiations between individual SEP owners and implementers may lead to an excessive aggregate royalty burden. Furthermore, it has frequently been suggested that implementers' inability to foresee their future royalty burden may chill or delay standard implementation decisions.³ These concerns have led to propositions that SEP holders negotiate and disclose a reasonable maximum aggregate royalty for standard implementers in both the academic literature (Contreras, 2015, 2017) and among stakeholders.⁴

The idea of SEP holder announcements of maximum aggregate royalties is thus not new; and there have been examples of such announcements.⁵ Nevertheless, these statements do not appear to have had the significant positive effects that some authors predicted. In the UK litigation *Unwired Planet v Huawei*, Judge Birss dismissed these statements as "self-serving".⁶ In the litigation between TCL and Ericsson in the US, Ericsson argued that its past expectations of a reasonable royalty should not form the basis for a determination of FRAND rates.⁷ Perhaps reflecting the underwhelming effect that these past statements have had, there appears to have been little recent interest among SEP holders to submit new joint

² The best-known formulation of the theory is by Lemley and Shapiro (2006). There have been numerous criticisms of the theory, its underlying assumptions, and the lack of empirical evidence supporting it; see in particular Geradin and Rato (2007), Sidak (2007), Elhauge (2008), Geradin et al. (2008), Galetovic and Gupta (2016)

³ Galetovic et al. (2015) find that the empirical evidence does not support these theoretical concerns. Recently, the proposition that uncertainty regarding the licensing terms for SEPs may dissuade standard implementations has largely focused on small implementers (see e.g. Henkel, 2022); despite the fact that most observable assertions of SEPs are targeted at large multinational firms.

⁴ See "Minimum Change Optimum Impact (MCOI)" proposal proposed jointly by Ericsson, Motorola, and Nokia in 2006; see <https://ec.europa.eu/docsroom/documents/2165/attachments/1/translations/en/renditions/native>

⁵ In April 2008, Alcatel-Lucent, Ericsson, NEC, NextWave Wireless, Nokia, Nokia Siemens Networks and Sony Ericsson e.g. issued a joint statement supporting "that a reasonable maximum aggregate royalty level for LTE essential IPR in handsets is a single-digit percentage of the sales price. For notebooks, with embedded LTE capabilities, the companies support a single-digit dollar amount as the maximum aggregate royalty level." <https://mb.cision.com/Main/15448/2246540/662517.pdf>

⁶ [2017] EWHC 711 (Pat); at 269: "In my judgment the statements set out above have little value in arriving at a benchmark rate today for a number of reasons. The claims are obviously self-serving. The statements about aggregate royalties in particular are statements about other people's money on the footing that the person making the statement says at the same time that the cake is quite small but they are entitled to a large piece of it."

⁷ U.S. District Court Central District of California, *TCL COMMUNICATIONS TECHNOLOGY HOLDINGS, LTD. et al. vs. TELEFONAKTIEBOLAGET LM ERICSSON, et al.*; SACV 14-341 NS(DFMx). See Memorandum of Findings of Fact and Conclusions of Law, p.21: "Ericsson admits making these statements, but argued that: (1) they were intended to be a prediction or hope for where the market would eventually drive royalty rates, (2) these statements were made against the backdrop of much higher industry estimates of the total aggregate royalty burden, and (3) they were made in the context of higher average selling prices for 4G phones which Ericsson did not expect to drop so low. (Ericsson FOF, 1,r 246, 249.)" While the District Court in that case determined a FRAND rate by apportionment from the announced aggregate royalty, this decision was later vacated in the Court of Appeal.

notifications of reasonable aggregate royalties. SEP holders have made little use of mechanisms offered by standard development organisations (SDOs) to voluntarily submit maximum royalty rates. Further, existing statements from SEP licensors regarding 5G describe these individual companies' expectations regarding the royalties for their own SEP portfolios. They do not represent an aggregate royalty negotiated in a larger group of SEP holders.⁸

In this context, industry experts and academics have called for regulatory interventions aiming to encourage or facilitate SEP holder negotiations on a reasonable aggregate royalty.⁹ In particular, the report of the EU Commission's 'SEP Expert Group' features three related proposals by one expert (proposals 42, 43, and 44).¹⁰ These proposals foresee a mechanism for a negotiated agreement between SEP holders on a reasonable aggregate royalty. Should this process fail, the reasonable aggregate royalty may be determined by a panel of experts.¹¹ The proposed mechanism described in Articles 15-18 of the Draft Regulation appears to be based on proposals 42, 43 and 44 from the SEP Expert Group report, albeit with certain significant differences.

In this paper, I analyse the mechanisms proposed in Articles 15 to 18 of the Draft Regulation. In the first section, I scrutinise the extent to which the evidence supports the need for the determination of reasonable aggregate royalties. In the second section, I assess the Commission's proposal, and in particular (i) the type of aggregate royalty statements that it would produce, (ii) their effects on SEP licensing negotiations, and (iii) whether the system would result in economically efficient FRAND royalties. In the third section, I analyse the broader regulatory context, including the role of aggregate royalty determinations for the Commission's overall policy goals, the strategic implications of the proposal within the current geopolitical context, and the possible duration and costs of the transition period until the system would be operative.

Overall, I conclude that Articles 15 to 18 should be eliminated from the Draft Regulation. There is no evidence for significant problems that could be solved by setting aggregate royalties. The proposed mechanisms are unlikely to work as intended. Furthermore, there is no realistic prospect of realising the significant transaction cost savings anticipated by the Commission's Impact Assessment. In addition to this, the determined rates may fail to set proper innovation incentives. The determination of aggregate royalty rates is also unnecessary and unhelpful to other aspects of the Draft Regulation, such as increasing transparency on SEPs. The EU Commission's proposal may furthermore exacerbate the risks of global fragmentation of SEP licensing. Finally, the proposal and its numerous ambiguities and unclear provisions would inject significant new uncertainty in SEP licensing.

⁸ ETSI currently lists "ex ante disclosures" of SEP licensing terms for 5G technology from three licensors.

<https://www.etsi.org/intellectual-property-rights/46-ipr/580-ex-ante-list-of-disclosures>

⁹ E.g. Regibeau et al. (2016): "We would suggest that ex ante aggregate royalty caps be set by the SSO members with a significant number of potentially standard-relevant patents. This would ensure that the royalty-stacking problem is dealt with and would also go at least some way towards addressing the hold-up issue."

¹⁰ Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600) "Contribution to the Debate on SEPs", available at <https://ec.europa.eu/docsroom/documents/44733>

¹¹ It is important to note that these proposals do not reflect a consensus position of the group. As indicated by the 2.5 stars it received, proposal 43 (calling for the intervention of an independent panel of experts in the absence of an agreement among SEP holders) was overall viewed less than neutrally by the group's members, and is among the 8 least endorsed of the 79 proposals included in the Report.

The Market for SEP Licences and the Case for Aggregate Royalties

Bilateral negotiations

The largest part of the market for SEP licences (by value, not by number of licences) consists in bilaterally negotiated licences. Most bilateral licensing activity takes place under the protection of non-disclosure agreements (NDAs). Therefore, relatively little is publicly known on how these licences are actually negotiated and concluded.

Nevertheless, we know that the value of SEP licences is extraordinarily skewed. A small number of SEP licensors earn a vast majority of the royalty revenue.¹² At the same time, even large licensors report that more than 60% of their licensing revenue comes from only four large licensees (Baron et al., 2023; p. 162). This means that the majority of global SEP royalty revenue is generated from a relatively small number of individually significant agreements.

The number of bilateral SEP licences is also relatively small. There is a long tail of standard implementers that do not take licences for most of the SEPs that they use. Many of the smaller implementers probably do not take any SEP licence at all (see Heiden and Baron, 2023). For many users of standards including patented technology, the effective price for utilising these SEPs is thus 0. There also is a long tail of companies who declare to own (some) potential SEPs, but who never succeed (and often never attempt) to earn royalty revenue. These companies' SEP declarations nevertheless contribute to fuel exaggerated accounts of a "patent thicket", in which implementers are allegedly faced with royalty requests from hundreds of SEP licensors (Shapiro, 2001).

Many bilateral SEP licences are concluded after protracted negotiations, taking an average estimated duration of 2-3 years (see Baron et al., 2023; pp. 143-145). During this time, parties exchange significant amounts of information. Offers and counter-offers are exchanged, and modified as a result of these negotiations.¹³ As a result, the terms of different SEP licences vary significantly. While SEP owners may announce certain "headline" royalty rates as a starting point for bilateral negotiations, effective royalty rates differ significantly from one licence to the other. Moreover, effective royalty rates are often significantly lower than the rates that SEP licensors may publicly announce.¹⁴

¹² According to the data collected by Galetovic et al. (2018); and reported in Table A1 of their paper, the six largest patent licensors in the world mobile phone industry (Qualcomm, Ericsson, Nokia, Interdigital, Alcatel-Lucent, Huawei) accounted for 85% of the total estimated royalty revenue in 2016.

¹³ Interdigital e.g. made at least 14 different offers in the course of its negotiations with Lenovo between December 2015 and August 2021. *Interdigital v. Lenovo* [2023] EWHC 539 (Pat); at 898.

¹⁴ See Baron et al. (2023), pp. 63-64; for an analysis comparing "unpacked" effective average royalty rates with licensors' announced rates.

Aggregate royalty rates in the existing system

As discussed, SEP licensing terms are primarily determined in bilateral negotiations between individual SEP licensors and implementers. Nevertheless, there are a number of contexts in which a reasonable aggregate royalty for a standard may be determined.

Patent pools

Patent pools are often formed to offer single licences to multiple firms' portfolios of SEPs. Many pools never grow to include more than a small percentage of the relevant SEP owners for a standard. In other cases, however, pools grow over time to include a vast majority of the relevant SEP portfolios for a standard, and attract large numbers of licensees.

When forming a pool, pool administrators and participating members may thus have to determine a reasonable royalty for the expected future size of the pool.¹⁵ In many cases, they may hope to include all or most of the relevant SEP portfolios for a standard. Thus, they may have to determine a reasonable aggregate royalty for the standard.

While pools may determine an aggregate royalty before SEP licences for a standard are concluded, they nevertheless do so in the shadow of a competitive market for FRAND licences. On the one hand, if pools set too high a price, many licensees will find profitable and viable alternatives in bilateral licensing with individual pool members. On the other hand, if pools set too low a price, fewer SEP owners will join.¹⁶ Pools attempting to determine a FRAND rate in advance of the market do not replace the marketplace as the regular venue for the determination of FRAND rates. Moreover, their determination of an aggregate royalty for the expected future pool size does not constrain participants of future SEP licensing negotiations. On the contrary, it is the pools' own licensing offering that is being tested in the market.

"Ex ante" announcements by SEP holders

In addition to the pools' practice, SEP holders may express, before having concluded any licences with implementers, their views or expectations regarding the aggregate rate. Such view reflects only an estimate of the value of different SEP holders' portfolios for a particular standard. SEP holders may make such announcements either alone or in coordination with other SEP holders. Joint announcements by

¹⁵ The Avanci '4G Vehicle' pool for instance was formed in 2016 with a small number of founding members including Ericsson, Qualcomm, InterDigital, KPN, Sony and ZTE. The pool has significantly expanded over time, and currently lists 56 licensors. During this time, the 4G royalty rate has increased from 15 USD to 20 USD, but existing licensees continue to benefit from the 15 USD royalty rate; even though the pool now offers access to a much larger number of companies' portfolios. It is important to recognise that pools' practices may differ significantly, and other pools may increase their rates when the value of the portfolio substantially increases (Brito and Contreras, 2021, Contreras and Brito, 2022).

¹⁶ In that case, the pool's low rate may correctly reflect the value of that smaller pool of SEPs.

various SEP holders may raise antitrust concerns, and SEP holders may be reluctant to share sensitive price information with their competitors for fear of antitrust liability (Nikolic, 2023). Nevertheless, past announcements of aggregate royalties from groups of competing SEP holders have not been challenged by antitrust authorities. Furthermore, existing guidance from the EU Commission makes it clear that joint announcements of maximum aggregate royalties by groups of SEP holders do not, in principle, violate EU competition law.¹⁷ In spite of this reassurance, there have been no significant recent instances of such joint announcements. Furthermore, existing statements do not appear to have had a significant impact on SEP licensing terms.

Use as cross-check in FRAND determination

Pool licensing offers covering some SEP portfolios, and companies' joint announcements of a reasonable aggregate royalty, are usually made ex ante. In other words, the offer or announcement is made prior to the formation of a market for SEP licences for a standard. However, reasonable aggregate royalties for a standard may also be determined ex post. In a "top down" approach, the determined aggregate royalty can then be apportioned to derive a rate for an individual portfolio. This rate may be presented as a cross check for the reasonableness of individual SEP owners' licensing offers (Tsilikas, 2020).¹⁸

In some cases (*Unwired Planet v Huawei*¹⁹, *TCL v Ericsson*²⁰), these proposed ex post cross checks relied on companies' ex ante announcements. In other cases (e.g. *In re Innovatio*²¹, *Interdigital v Lenovo*²²), parties suggested ways to determine an aggregate royalty based on product market information that was not available ex ante. An example would be to use the information on the price and demand for different products implementing the standard.

Overall, aggregate royalty rate determinations have played a limited role in FRAND determinations. They have been used as a cross-check in *Unwired Planet v Huawei*, overturned in *TCL v Ericsson*, and dismissed in *Interdigital v Lenovo*. Licensing terms of comparable licences are generally the primary indicator that is used to establish whether a SEP owner has made a FRAND licensing offer.²³

¹⁷ COMMUNICATION FROM THE COMMISSION Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (2023/C 259/01); at 474.

¹⁸ See also Pentheroudakis and Baron (2017), pp. 94-95.

¹⁹ *Unwired Planet v. Huawei* [2017] EWHC 711(Pat), affirmed *Unwired Planet v. Huawei* [2018] EWCA Civ 2344.

²⁰ *TCL Comm'n v. Telefonaktiebolaget Ericsson*, Case No. 8:14-cv-00341-JVS-DFM (C.D. Cal. 2019)

²¹ *In re Innovatio IP Ventures, LLC*, 921 F. Supp. 2d 903 (N.D. Ill. 2013)

²² *Interdigital v. Lenovo* [2023] EWHC 539 (Pat);

²³ See *Ericsson v D-Link*, 773 F.3d 1201 at 1228 (Fed. Cir. 2014); at pp. 41-42. German courts have repeatedly clarified that it is generally required and sufficient that a SEP licensor discloses the rates of relevant comparable licences to justify the FRAND character of a SEP licensing offer; see Regional Court (Landgericht) of Düsseldorf, 13 July 2017 - Case No. 4a O 154/15; at 398. *Fraunhofer-Gesellschaft (MPEG-LA) v ZTE*, Regional Court (Landgericht) of Düsseldorf, 9 November 2018 - Case No. 4a O 15/17; at 381. Regional Court (Landgericht) of Düsseldorf, 11 July 2018 - Case No. 4c O 81/17; at 258-259.

Assessment of the efficiency of SEP Licensing

Economic theories

In existing SEP licensing markets, licensing terms for different SEP portfolios are largely formed independently of each other, with a limited role for aggregate royalty considerations. Some economic theories predict that absence of coordination among SEP owners leads to royalty stacking. Royalty stacking is defined as a situation in which the sum of the individually defined royalty rates exceeds the optimal royalty that patent holders would jointly determine to maximise their collective royalty revenue (Lemley and Shapiro, 2007).

Other theoretical contributions however suggest that these concerns are unfounded. For instance, Spulber (2016) maintains that the determination of licensing terms through bargaining between SEP holders and implementers (as opposed to unilateral price announcements by SEP holders) eliminates the risk of royalty stacking. Llobet and Padilla (2022) study the formation of royalty rates in a situation in which patents' validity is uncertain. They find that the aggregate royalty burden for bilateral licences to different portfolios of complementary SEPs may be lower than the aggregate royalty that these SEP holders would jointly determine for a pool of their SEPs.

Empirical evidence on royalty stacking

Given the contrasting views in the theoretical literature, it is important to discuss the empirical evidence: do royalties for different, complementary SEP licences stack up to an unreasonable aggregate royalty burden?

The Commission in Appendix A7.2 of its Impact Assessment Report ["Results of Literature Analysis"] discusses its interpretation of the empirical literature. The Commission suggests that the empirical literature is divided on the existence of an excessive aggregate royalty burden:

Geradin et al. (2008), in "assess[ing] the case for royalty stacking within standards [...] find the evidentiary support weak at best." In contrast, Lemley and Shapiro (2007) "using third-generation cellular telephones and Wi-Fi as leading examples, [...] illustrate that royalty stacking can become a very serious problem, especially in the standard-setting context where hundreds or even thousands of patents can read on a single product standard."

In reality, there is no genuine controversy in the empirical literature as to whether there is an excessive aggregate royalty burden on standards implementers.

On one hand, several papers compiled known SEP licensors' reported royalty revenues from regulatory filings; arriving at similar conclusions (Galetovic et al. 2018; Sidak 2016). These papers establish that the

total royalty stack in the mobile telecommunication industry is around 3-5%.²⁴ It bears emphasis that these papers calculate the industry average aggregate royalty burden. Thus, individual implementers may have a higher royalty burden. However, the effective average aggregate royalty burden on implementers appears to be well below an excessive burden.

On the other hand, the papers alleging strong empirical support for the existence of a royalty stacking problem provide little evidence on actual aggregate royalties paid by implementers. It is worth dwelling a little on the source of the above-cited statement alleging significant empirical support for the existence of a serious royalty stacking problem in WiFi and 3G cellular technology. Lemley and Shapiro (2007) do not provide any evidence regarding the actual aggregate royalty burden paid by WiFi implementers. With respect to 3G cellular, the paper features the following paragraph as the only discussion of implementers' actual royalty burden:

"It is not clear what the total cost of these stacked royalties is. We have seen estimates as high as 30% of the total price of each phone, but those were based on summing royalty demands before any cross-licensing negotiations began. Bekkers suggests that the cost of patent licenses for cell phone Internet functionality after cross-licensing offsets is in the range of 20% of the price of the entire phone."

The working paper that is the source for the estimate of 20% (Bekkers and West, 2006) features the following sentence:

"However, the cumulative royalties have already proven a problem that contributed to the delayed adoption of UMTS technologies. One estimate placed the total royalties of UMTS equipment at 20% (PA Consulting, 2002), while the leading GSM vendors paid little or nothing due to cross-licensing (Bekkers, 2001; Loomis, 2005)."

The cited source for the 20% estimate is a consulting company's press release from 2002, which is still accessible through Internet Archives.²⁵ The only sentence in this 20-year-old press release potentially supporting the reference is the following:

"In second generation standards like GSM and cdmaOne, the licensing process is complex and expensive for the licensee, since licenses are needed from a dozen or more Essential patent holders. Royalty rates payable can reach 20% of the handset's sale price."

The press release offers no further source or methodology for the 20% estimate. Notably, the press release refers to the *potential* royalty burden for 2G cellular technologies, not 3G as suggested in the citing academic papers. As Bekkers' own findings conclude, *"the leading GSM vendors paid little or nothing due to cross-licensing."* Overall, the statement that WiFi and 3G cellular technologies

²⁴ Galetovic et al. (2018) found that the average cumulative royalty yield in the mobile phone industry in 2016 was 3.3 percent or 7.20 USD per phone. Sidak (2016), who also accounts for cross-licensing as a form of payment, finds that "the aggregate SEP royalty that implementers paid in 2013 and 2014 was between 4 and 5 percent of global handset revenues for handsets practicing the 3G and 4G standards". The underlying data is publicly available, and can be compared with the equally publicly available original source documents.

²⁵

https://web.archive.org/web/20031014161127/https://www.paconsulting.com/news/press_release/2002/pr_20020911.htm

“illustrate that royalty stacking can become a very serious problem” is thus not based on any actual empirical evidence regarding the aggregate royalties paid by implementers of these technologies.

In the absence of such evidence, several authors infer the existence of a royalty stacking problem from individual licensors’ posted royalty rates. Armstrong et al. (2014) for instance collected 12 licensors’ “publicly disclosed royalty rates” for LTE. They concluded that the total “royalty stack” for these companies’ LTE SEPs (which account for only 50 to 60% of the disclosed potential SEPs for LTE) would amount to 54.30 USD for a 400 USD device. Stasik (2010) similarly found that individual companies’ *announced* rates for LTE stack up to an aggregate royalty of 14.8%.

There are at least two major problems with stacking up different (potential) SEP owners’ announced royalty rates (see Layne-Farrar, 2014). First, these “publicly disclosed royalty rates” often explicitly refer to SEP owners’ general expectations regarding licensing terms, which are subject to negotiation with implementers. They do not provide evidence of the effective royalty rates that any implementer is paying. In the empirical study for the Commission, we compared companies’ announced rates with effective rates of actual SEP licences disclosed through litigation (Baron et al., 2023; pp. 63-64). We found that announced rates are often a high ceiling to the effective rates paid by implementers. Second, not every implementer pays royalties to every owner of (potential) SEPs. In fact, many companies declaring to own (potential) SEPs never collect any royalties from implementers.

The Commission nevertheless relies on a variant of this argument. The Impact Assessment Report points to one individual licensor’s royalty requests, along with the number of other companies that declare to own (potential) SEPs for the same standard, as “clear illustration of the problem of royalty stacking”.²⁶ This exercise is even more misleading than adding up individual licensors’ announcements: many of the other owners of potential declared SEPs may not even seek to license their potential SEPs at all, and many of them may not own any patents that are actually essential and valid.²⁷ Furthermore, they may charge lower royalties because their patents are less valuable.²⁸

Overall, there is neither convincing direct (aggregate royalty estimates) nor indirect evidence that royalty stacking is indeed a common problem in mobile telecoms (Layne-Farrar, 2014).

²⁶: “A clear illustration of the problem of royalty stacking is provided by the decision of the U.S. District Court of the Western District of Washington at Seattle in *Microsoft Corp. v. Motorola, Inc.* in 2013. Commenting on Motorola’s royalty demands for its SEPs on the Wi-Fi (802.11) standard, the court noted: “If each of these 92 entities [owners of Wi-Fi SEPs] sought royalties similar to Motorola’s request of 1.15 % to 1.73% of the end-product price, the aggregate royalty to implement the 802.11 Standard, which is only one feature of the Xbox product, would exceed the total product price. The court concludes that a royalty rate that implicates such clear stacking concerns cannot be a RAND royalty rate.”

²⁷ If anything, the analysis may suggest that one individual SEP licensor made a non-FRAND offer (and the implementer was able to use existing avenues of redress to successfully defend against these royalty demands), but is not an empirical statement on the aggregate royalty burden any implementers actually had to pay.

²⁸ “FRAND rates should reflect the value of the SEPs at issue, so it makes no economic sense to estimate an aggregate rate for a standard by assuming that all SEP holders would charge the same rate as the one being challenged in the current lawsuit.” (Layne-Farrar and Wong-Ervin, 2017)

Reasonable vs effective aggregate royalties – the problem of under-licensing

Courts have recognised that the actual royalty burden must be shown to be excessive to justify royalty stacking concerns.²⁹ The Commission however seems persuaded that individual SEP licensors' royalty requests may provide evidence of a royalty stacking problem. It essentially redefines royalty stacking as a counterfactual scenario. Royalty stacking then describes a situation in which individual SEP holders' royalty requests *hypothetically* would result in an excessive royalty burden, if (i) other SEP holders requested the same per-patent royalty rate, and (ii) implementers actually had to pay each licensor the requested royalty. According to the Commission, "[t]his logic is plausible since, if some SEP holders do not demand royalties, there is no reason why those should be collected by other SEP holders that do enforce their patents; rather, consumers should benefit through lower prices that will likely result from a reduced SEP royalty burden."

This re-defined notion of royalty stacking lacks any tangible economic relevance. The original concern about royalty stacking is that an excessive aggregate royalty burden on implementers depresses standard implementation incentives. This may deprive both licensors and implementers of potential revenues, and consumers of valuable products. A situation in which implementers may pay individual licensors significant royalties, but still benefit from a low aggregate royalty burden, does not have the potential to produce this effect. The reason for this is that implementers care about their overall implementation costs, not about how their royalty payments are split between licensors.

There also is no analysis whether the outcome that the Commission describes as appropriate is economically viable. Suppose that an aggregate royalty is defined such as to ensure that SEP holders' R&D contributions are sufficiently remunerated, while leaving standard implementers with a sufficient profit margin. SEP owners who successfully assert their SEPs against implementers may collect their share in the reasonable aggregate royalty. Any uncollected royalties reduce the overall cost for implementers. As only a (possibly small) share of the hypothetical licences between every SEP owner and every implementer would ever be concluded, only a (small) share of the reasonable aggregate royalty is actually collected. Therefore, the effective aggregate royalty would be much lower than the 'reasonable' aggregate royalty. Suppose the 'reasonable' royalty has been set at a level that ensures that SEP holders are sufficiently remunerated. In this case, there is no guarantee that the much lower effective aggregate royalty will still compensate SEP owners sufficiently to preserve R&D and standards development participation incentives.

The Commission's proposed test for the adequacy of FRAND royalties makes sense for a hypothetical, counterfactual world in which every implementer pays royalties to every SEP owner. In the real world, however, under-licensing is pervasive.³⁰ Therefore, the royalty rates for each individual SEP licence should be such that individual implementers do not *effectively* have to pay an excessive royalty burden. At the same time, SEP holders' *effective* royalty revenue should be sufficient to compensate them for their R&D efforts.

Courts understand this: royalties must be lowered to account for royalty stacking in situations in which implementers *effectively* face an excessive royalty burden. A hypothetical royalty stacking problem arising in a counterfactual scenario should not be considered evidence of the effective royalty burden for any

²⁹ See in particular *Ericsson v D-Link*, 773 F.3d 1201 at 1228 (Fed. Cir. 2014), at pp. 53-55.

³⁰ See Baron et al. (2023); pp. 157-163

(potential) implementer. As we have seen, the existing evidence suggests that the effective royalty burden on implementers can hardly be described as excessive.

Ultimately, the Commission seems to have decided that it does not need empirical evidence regarding the existence of a royalty stacking problem in order to justify that regulation is needed to prevent royalty stacking: “In any case, no matter if the problem of royalty stacking is weak or serious, an explicit aggregate royalty should help to mitigate it.” (Impact Assessment Report, p. 119). This approach seems to conflict with the Commission’s own Better Regulation Framework, which holds the Commission to prepare “laws and policies transparently, based on evidence and backed up by the views of citizens and stakeholders.”³¹

The Commission’s Proposal for Aggregate Royalty Determination

Summary of Commission proposal

The Draft Regulation defines ‘aggregate royalty’ as the “**maximum** amount of royalty for all patents essential to a standard” [emphasis added]. The reasonable aggregate royalty thus explicitly defines a ceiling. It does not indicate a minimum or average aggregate royalty contribution that each implementer should be expected to pay.

Recital 16 states that “SEP holders should have the opportunity to jointly inform the competence centre of the publication of the standard or the aggregate royalty which they have agreed upon among themselves”. Article 16 describes a process for revising earlier aggregate royalty notifications. Article 17 stipulates that SEP holders holding at least 20% of the estimated SEPs may request a conciliator. Finally, Article 18 stipulates that one SEP holder or an implementer may request the competence centre for a nonbinding expert opinion on a global aggregate royalty. The competence centre shall appoint a panel of three conciliators. The conciliators will (i) collect proposals of aggregate royalties from participating SEP holders, and (ii) issue a public expert opinion along with supporting analysis. The opinion needs to be supported by at least two of the three experts.

The Commission’s proposal thus encompasses three different processes how an aggregate royalty could be defined: (i) by SEP holders’ joint notification, (ii) through a conciliation process, or (iii) through an expert opinion. There are different participation thresholds and deadlines for these different processes. However, these thresholds appear to be mostly meaningless.

There is no minimum number of SEP holders that need to participate in a joint notification to the competence centre. The participation of a conciliator in SEP holders’ joint notifications, and the determination of an expert panels’ opinion, require the participation of “SEP holders representing at least 20% of the estimated SEPs”. Nevertheless, as this process occurs prior to any essentiality checks, it is likely

³¹ https://commission.europa.eu/law/law-making-process/planning-and-proposing-law_en

that this threshold would be applied to companies' self-assessed shares.³² Any group of companies may easily claim that they believe that they collectively own 20% of the relevant SEPs. The process is intended to take place prior to the formation of product markets for the relevant use cases. The requirement for participation from implementers holding collectively 10% relevant market share in the Union thus seems similarly based on companies' own assessments and projections.

Similarly, the deadlines for the different processes are meaningless – joint notifications, or requests for a conciliation and/or an expert opinion are required to occur a specified number of days after “first sale of a new implementation” and/or “after publication of a standard”. To be considered is that there are yearly new releases of the hundreds of technical specifications that define complex technologies such as 5G. Moreover, new implementations are brought to the market on an ongoing basis. Consequently, stakeholders would always be able to find a recent qualifying event to point to in order to justify that their submission (or request) is timely.

The proposal thus allows any group of companies to populate the database with their views of what the aggregate royalty should be. Even a small group of minor stakeholders can involve a conciliator appointed by the competence centre in their submission, giving a more official appearance to this submission. Anybody can trigger a process for an expert opinion. The opinion would only need to be supported by a small group of stakeholders to force a panel of experts to make a decision (by majority of two out of three).

It is also clear that these thresholds can be simultaneously met by different sets of companies. Multiple groups of companies can submit joint notifications of aggregate royalty rates. Furthermore, multiple groups of companies can request a conciliator to facilitate their respective joint notifications. The Expert Group proposals 42-44 aimed to disqualify joint notifications exclusively supported by net licensors or net licensees. Nevertheless, there is nothing in the Regulation proposal that would ensure that joint notifications of royalty rates would not exclusively be endorsed by companies with a joint interest in either very low or very high aggregate royalties.³³

Assessment of the proposal

My assessment of the Commission's proposal consists in three parts: first, what type of reasonable aggregate royalties will emerge from the mechanisms proposed by the Commission; second, what is the effect of these aggregate royalties on SEP licensing negotiations and costs; and third, will the proposed aggregate royalties contribute to the determination of economically efficient FRAND rates?

³² Companies are invited to declare the estimated percentage of SEPs they hold in 15.2 (d); 17.3 (e); 18.5; and no other source for such estimates is mentioned.

³³ It is less clear whether there also can be multiple expert opinions for the same or closely related standards/implementations. As experts are randomly drawn, and a simple majority of two is sufficient for an expert opinion, expert panels could easily include a majority of two experts viewed as sympathetic to one side or the other. A company that disagrees with the views of these two experts would then have incentives to issue a new request for an expert opinion in an attempt to obtain a more favourable composition of the panel in a second random draw.

What aggregate royalties will result from the proposed mechanisms?

In this section, I analyse what aggregate royalties are likely to result from the proposed mechanisms, i.e., (i) to what extent it is likely that the proposed processes elicit meaningful joint notifications of aggregate royalty rates; (ii) which stakeholders would likely solicit expert opinions on aggregate royalties, and how often; and (iii) which SEP holders are likely to participate in that process, and how meaningful their contributions to the process would be.

The Commission's proposal appears to presume that SEP holders would be eager to voluntarily participate in comprehensive negotiations on an aggregate royalty involving both net licensors and net licensees. It further presumes that such voluntary negotiations would result in meaningful and informative statements about a reasonable aggregate royalty.

As discussed, this optimism has some basis in the academic literature on royalty stacking. According to the royalty stacking theory, potential implementers would be concerned that using the standard may expose them to an excessive aggregate royalty burden. Because of these concerns, implementers allegedly may be unwilling to invest in the implementation of a standard. This would deprive the companies that developed the standard of a market for their technologies. Therefore, early commitments to a reasonable aggregate royalty may encourage standard implementation and make good business sense for SEP licensors.³⁴

Nevertheless, this optimism is difficult to reconcile with the fact that there has been little recent interest among SEP holders in announcements of aggregate royalties. This lack of interest may be due to the fact that implementers' decisions to implement a standard are based on the effective royalty burden they face. They are not based on a hypothetical 'reasonable' aggregate royalty for licences to all potential SEPs for a standard. There is no evidence that the existence of potentially royalty-bearing SEPs discourages or delays standard implementation (Baron et al., 2023; p. 184). An average effective royalty burden of 3-5% may simply be too low to discourage potential implementers from adopting the latest generation technology. Therefore, SEP holders' agreements on a reasonable maximum aggregate royalty would have limited effects on standard implementation decisions.

Suppose one was willing to assume that potential implementers' concerns about their future aggregate royalty burden are sufficiently severe to significantly discourage standard implementation. This would deprive SEP owners of potential licensing revenue. Nevertheless, commitments to a reasonable aggregate royalty would need to be supported by a grand coalition of all or almost all relevant SEP licensors in order to offer meaningful reassurance to implementers.³⁵ Announcements by SEP holders representing 20% of

³⁴ See Impact Assessment Report: "This may, however, dissuade implementers from taking a licence, which should have a self-limiting effect on SEP holders, as wide implementation of the standard is of interest to the SEP owners. Nevertheless, in order to cater for such situations, a group composed of standard contributors and/or implementers may ask the Competence Centre for a non-binding expert opinion on the aggregate royalty".

³⁵ In the absence of such a grand coalition, some SEP holders may make meaningful commitments on low aggregate royalties to encourage earlier or greater standard implementation. Other SEP holders may take advantage of this increased demand for the standardised technology to increase their rates. Aoki and Nagaoka

the potential SEPs for a standard have no meaningful effect on implementers' overall effective exposure to SEP licensing costs.

The possible participation of net licensees in these discussions fundamentally alters the calculus for potential licensors. Net licensees have an interest in aggregate royalties to be as low as possible. It is not clear what incentives licensors would have to participate in negotiations with net licensees about a reasonable *maximum* aggregate royalty. Such an aggregate royalty would only constrain licensors' licensing positions. It would not constitute any agreement from implementers to actually pay such an aggregate royalty. This would remove the prospect for meaningful negotiations between licensors and licensees on such a maximum rate.

Instead, net licensees have an incentive to use the process for problematic concerted action. They may for instance exchange competitively sensitive price information. More immediately, licensees may use the process for a concerted push to depress royalty levels. If major net licensees agree among themselves not to pay more than a certain amount, SEP licensors may find it difficult to build market acceptance for their FRAND licensing offers. Such negotiations among net licensees on maximum rates resemble a buyer's cartel, and are clearly concerning from an antitrust perspective (Nikolic, 2023).³⁶

Overall, the mere possibility for SEP holders to submit joint notifications of a reasonable aggregate royalty is unlikely to lead to meaningful statements supported by large groups of relevant stakeholders. As amply demonstrated by longstanding debates about FRAND, there are wide differences between different companies' views on what royalty level would be reasonable in different industries. Companies from different sides of the debate will not resolve their differences just to take advantage of the possibility to submit a joint notification to the EU competence centre. The possibility for companies to involve a conciliator is also unlikely to resolve companies' fundamental disagreements.

The Draft Regulation (as well as proposals 42-44 in the SEP Expert Group report) seems to acknowledge that the mere possibility for SEP holders to propose a reasonable aggregate royalty would be insufficient to elicit meaningful negotiations and notifications. The prospect that a 'reasonable' aggregate royalty could otherwise be determined by a panel of experts may motivate SEP holders to proactively propose a reasonable aggregate royalty. This is however only possible if a meaningful proposal from SEP holders would suffice to rule out the intervention of a panel of experts. Furthermore, SEP holders would need to assign significant importance to the expert panel's non-binding opinion. Only if that is the case, might they be willing to make commitments to reasonable aggregate royalty rates that they would be unwilling to make without the prospect of an expert opinion.

It seems unlikely that these two requirements may be satisfied. There seems to be an expectation/intention that an expert opinion would only be requested if SEP holders fail to agree on an aggregate royalty.³⁷ Nevertheless, there are no provisions in the Draft Regulation that would explicitly rule out requests for an expert opinion if larger groups of SEP holders may still agree, or have already agreed

(2004) calculate the share of SEP licensors that would need to participate in such a "grand coalition" for an effort to reduce the aggregate royalty burden for implementers to be profitable for licensors.

³⁶ This is to be distinguished from the joint announcements of reasonable (maximum) aggregate royalties by licensors that were observed in the past. As discussed, existing guidance from the EU Commission states that such joint announcements do not generally violate EU competition law.

³⁷ See e.g. footnote 303 of the Impact Assessment Report.

on a reasonable aggregate royalty.³⁸ Furthermore, while the expert panel's opinion is explicitly non-binding, SEP holders may be bound by their own statements regarding a reasonable aggregate royalty rate in future SEP licensing negotiations or litigation. SEP holders are thus unlikely to make potentially binding commitments to rates just to avoid an expert panel's non-binding opinion that they could more easily dismiss in case they disagree with it.

If the prospect of an expert panel's opinion fails to motivate SEP holders to overcome their differences and agree on a joint notification of an aggregate royalty, Article 18 provides for one additional nudge. At this stage SEP holders can no longer avoid that an expert panel will render an opinion. However, they may attempt to sway the experts with their active participation in the process. Nevertheless, it is not clear whether companies would attempt to persuade the experts by making an objectively reasonable proposal.³⁹ Instead, implementers and SEP owners may try to lower or increase experts' perception of the reasonable royalty range by proposing very low or very high aggregate rates. Furthermore, as before, the very limited legal force of an expert panel's opinion means that companies would be unwilling to make potentially binding proposals restricting their own licensing strategies just to influence the content of the experts' report.

Overall, while the proposed mechanisms are clearly intended to generate meaningful negotiations among SEP holders, companies' incentives are heavily stacked against a meaningful participation. Therefore, the process is likely to produce a number of wildly incompatible statements from net licensors and net licensees, respectively.

In addition, the process may lead to a report reflecting the personal opinion of two individual experts (out of a group of three experts selected from a roster). The outcome of this process largely hinges on which three experts are drawn into the panel. Given that a simple majority of two out of three experts is required, the selection of one individual expert whose views are more strongly aligned with either net licensors or net licensees could fundamentally alter the content of the expert panel's opinion.

It is not uncommon that important policy decisions are delegated to bodies of experts. Usually, the function of these expert bodies is to reflect a consolidated consensus of subject matter experts on policy questions. Nevertheless, a vote among three experts on a matter on which no such consensus exists is meaningless. The Commission itself discouraged the 15 experts it had appointed to the SEP Expert Group from voting on policy proposals. It ultimately adopted a policy proposal viewed less than favourably by the majority of the individual members of the group. By doing so, the Commission made it clear that the majority view of the experts it selected was not relevant to its appreciation of individual experts'

³⁸ While the different deadlines in the proposal suggest that requests for expert opinions *may* be filed after the deadline for SEP holders' notifications of reasonable royalties has expired, requests for an expert opinion may also be filed while SEP holders still have a chance to notify a reasonable royalty; and – more importantly – given the low participation thresholds, a panel of experts may well have to deliver an opinion upon the request of a small group of stakeholders, even though a reasonable aggregate royalty has been negotiated between SEP holders that is agreeable to a large majority of the relevant stakeholders. The proposed mechanisms in the expert group report were much more explicit in reserving the intervention of an independent arbitration panel to situations in which no agreement was reached.

³⁹ In the literature, a mechanism where a neutral third party picks the most reasonable among different parties' proposed rates has been called "baseball style" (Lemley and Shapiro, 2013). The mechanism is supposed to elicit reasonable proposals from different parties, as unreasonably high or low offers would be merely discarded and have no effect on the final determination. See Sidak (2014) for a criticism of "baseball style" arbitration.

proposals. If the Commission believes that majority voting in a group of 15 selected experts is meaningless, it is unclear why a majority vote in a panel of three experts should be considered a relevant expression of the general opinion of subject matter experts regarding a reasonable aggregate royalty for a particular standard.

Overall, the process described in the proposed SEP regulation is likely to result in disparate and largely arbitrary opinions on aggregate royalties. Such opinions and statements clearly have no prospect of significantly improving SEP licensing conditions. Nevertheless, even if the process managed to elicit meaningful notifications of aggregate royalties, it may not produce the significant benefits expected by the Commission's Impact Assessment.

Effect of determined/notified aggregate rates on FRAND licensing negotiations

Three potential benefits of determining aggregate rates are mentioned by the Commission's Impact Assessment Report: (i) provide early information on prices;⁴⁰ (ii) facilitate parties' search for a FRAND rate during SEP licensing negotiations;⁴¹ and (iii) constrain potentially excessive royalty requests such as to curb hold-up and royalty stacking.⁴²

These different benefits are related to different potential functions of the aggregate royalty rates. First, the proposed aggregate royalty may effectively be a forecast of expected future licensing terms.⁴³ Expert forecasts of effective aggregate royalty burdens on implementers may increase predictability for some

⁴⁰ "Knowing it for different applications would simplify cost planning for SEP implementers and assessment, if their business model is profitable. [...] For SEP holders it will allow to decide if they wish to contribute their technology to a standardisation process and help estimate potential future revenues." Impact Assessment Report p. 44

⁴¹ "Besides predictability, this option is also expected to facilitate SEP license negotiations. [...] By combining an aggregate royalty with a SEP owner's share in all essential patents for a standard (from PO2), one obtains a proxy (albeit imperfect) of a royalty level to be expected. This could establish a reference point to help negotiating parties in reaching an agreement. It might be especially useful for smaller and SME implementers (who have limited resources to conduct own research or gather evidence), but also for (smaller) SEP holders who could underpin their FRAND offer with additional, publicly available evidence." Impact Assessment Report p. 45

⁴² "It may also help to overcome problems of royalty stacking, a modern version of Cournot's (1838) well-known problem that the independent pricing of complementary goods – here: licenses to different SEP portfolios on the same standard – leads to excessive prices, above those that a single party offering all those goods jointly would charge." Impact Assessment Report p. 44

⁴³ Note that many existing announcements of licensing terms are explicitly worded as expectations of future licensing conditions, rather than commitments to certain caps; e.g. Qualcomm's *LTE/WiMAX Patent Licensing Statement* from December 2008: "Qualcomm expects that it will charge royalties for a license under its standards essential LTE patents and/or standards essential WiMax patents for complete, end user subscriber devices that implement LTE and/or WiMax standards, but do not implement any 3G CDMA standards, of approximately 3.25% of the wholesale selling price of each such device, subject to reciprocity and other standard terms and conditions. Qualcomm's expectation is based upon its understanding of the current LTE and WiMax standards under development and its existing patent portfolio. Qualcomm's current expectation may change in the future based on, among other things, changes to the LTE and/or WiMax standards and/or changes to Qualcomm's patent portfolio (e.g., acquisition of additional applicable patents)." https://www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/lte-wimax-patent-licensing-statement_1.pdf

stakeholders lacking this expertise. Second, industry stakeholders and experts may offer objective indications of the reasonable aggregate royalty. These statements may assist negotiating parties searching for such objective indications during the course of bilateral negotiations. Third, patent holders' jointly notified aggregate royalties may be interpreted as binding commitments. Even the expert panel's opinion, while explicitly described as "non-binding", may constrain the effective royalty rates that SEP holders will offer.

We can examine each of these potential functions in turn.

The potential first function of SEP holders' notified aggregate royalty rates is to provide implementers with early information about their effective royalty burden. Nevertheless, the predictive value of these notifications is likely to be limited. Experience with past announcements has shown that SEP holders' early announcements of royalty rates are a high ceiling to the rates they effectively charge. The predictive value of the notifications generated by the Draft Regulation may be even more limited. As assessed before, joint notifications are likely to be made by groups of similarly-minded companies, which have preferences for either very high or very low aggregate rates. Moreover, other (crucial) SEP licensors would likely not participate in any notification. Such a collection of inconsistent and non-comprehensive notifications provides no additional clarity to unsophisticated stakeholders with no SEP licensing experience (see also Nikolic, 2023).

Expert opinions about a reasonable estimate of implementers' aggregate royalty burden are unlikely to be significantly more useful. Different experts already publish their opinions about the effective aggregate royalty burden that implementers may face. These predictions have often been wildly wrong.⁴⁴ Experts in our field have very different opinions on almost anything related to SEP licensing. Many of the most knowledgeable experts are affiliated with one or more stakeholders in different ways. Therefore, expert opinions also vary widely on what would be a reasonable aggregate royalty for an emerging standard. In this context, an opinion supported by two out of three individual experts would have very limited predictive value.

In the second function, the aggregate royalty announcements would provide negotiating parties with an objective estimate of a reasonable aggregate royalty (along with supporting analysis). This estimate could be used to facilitate parties' agreement on bilaterally negotiated royalty rates. This is the only effect quantified in the Commission's Impact Assessment Report. The Commission predicts that the availability of such "objective benchmarks" would reduce the cost of SEP licensing negotiations by as much as 20%.⁴⁵

Such significant cost savings could only materialise if (i) the assessment of the aggregate royalty accounts for a very significant share of total SEP licensing negotiation costs, and (ii) the availability of an aggregate

⁴⁴ An example is the experts who reported to Lemley and Shapiro that the aggregate royalty for 3G cellular in mobile equipment would reach 20 to 30 %.

⁴⁵ "Publication of an aggregate royalty is expected to facilitate negotiations for all implementers who currently take license in the EU and pay license fee. As estimated in Annex A5.1 these concern around 575 new SEP licenses involving EU stakeholders signed per year. The value of information on aggregate royalty is estimated to save around EUR 22 000 in negotiation costs (accounting for approximately 20% of an average negotiation cost of EUR 108 000)". [p. 108 Impact Assessment Report]

royalty from the competence centre would eliminate the need for parties to carry out their own assessments of that aggregate royalty.⁴⁶

Each of these premises is untenable. Empirical evidence from courts' FRAND determinations shows that comparable licences are most commonly used to determine FRAND rates.⁴⁷ Top-down analyses have much more rarely been used in SEP litigation cases. While there is limited data on the information that is used during bilateral negotiations, it is plausible that the (particularly complex) top-down analyses are even less common in the negotiation context than during litigation.

Those top-down analyses that have been conducted likely have been expensive (contributing to their limited use). This can chiefly be attributed to the difficulty and cost of apportionment, rather than the cost of determining an aggregate royalty. Finally, where a top-down analysis is used, there can be different estimates of a reasonable aggregate royalty.⁴⁸ The availability of one estimate of a reasonable royalty thus does not preclude that parties still have good arguments to defend a different estimate. Among existing methods, the most appropriate economic approaches to the determination of an aggregate royalty rely on the observed demand for products including the standardised technology.⁴⁹ An aggregate royalty that was estimated before the market for this product has formed cannot replace assessments based on actual product market information. For all these reasons, costly assessments of an appropriate aggregate royalty would thus still have to be carried out if a party chooses to perform a top-down analysis.

The fact that top-down approaches currently play a limited role does not preclude that guidance from the competence centre on the aggregate royalty may reduce SEP licensing negotiation costs. One may hypothesise (i) that stakeholders currently not using top-down approaches would do so if only an objective benchmark for an aggregate royalty was available; and (ii) such an approach would be dramatically cheaper than the approach they would otherwise use for the determination of FRAND rates.⁵⁰

Again, both these premises are untenable. Even if an aggregate royalty was available from an EU competence centre, many parties would continue to prefer other approaches to the determination of

⁴⁶ If the availability of guidance on the aggregate royalty rate from the competence centre only reduces, but does not eliminate the need for parties' own assessment, the share of the cost of SEP licensing negotiations attributed to determinations of an aggregate royalty would need to be even larger than 20% to produce the cost savings imagined by the Commission. If for instance one assumes that the availability of guidance from the competence centre reduces parties' own efforts to determine an aggregate royalty by half, the guidance may reduce SEP licensing negotiation costs by 20% only if the cost of determining an aggregate royalty accounts for 40% of the total expense of SEP licensing negotiations. This seems wildly unrealistic.

⁴⁷ see Baron et al., 2023; at 77; and Appendix 5 pp. 203-210.

⁴⁸ For a discussion of some available approaches, see the 'Contribution to the Debate' of the SEP Expert Group, pp. 104-105, and pp. 110-111.

⁴⁹ See Contribution to the Debate' of the SEP Expert Group, p. 111, stating that "in case the incremental price or demand is not directly observable, substantive economic knowledge is needed to estimate the proxy variables."

⁵⁰ If one assumes that the availability of a reasonable aggregate royalty from the competence centre would shift the preferred method for determining FRAND rates in a large number of SEP licensing negotiations, accounting for 50% of the total SEP licensing negotiation cost (a hugely optimistic prediction), this shift would need to reduce the total cost of these licensing negotiations by 40% to produce the Commission's predicted 20% decline in overall SEP licensing negotiation costs. Even if one thinks that as much as half of parties' total negotiation costs are related to efforts of producing objective benchmarks for the FRAND value of a licence, the shift to top-down would need to reduce the cost of these efforts by 80% to produce the total estimated benefits.

FRAND rates. Even if the use of top-down analyses were to be significantly expanded, this is unlikely to eliminate the need for parties' expenses on comparable licences analyses.⁵¹ Furthermore, as mentioned above, many of the significant costs of a top-down analysis would continue to arise even if a respected aggregate royalty for a standard and use case was available.

Overall, the Commission's assessments that parties' voluntary consideration of a non-binding aggregate royalty may reduce SEP licensing costs by 20% seem highly exaggerated. A non-binding aggregate royalty from the competence centre *may* be used to complement or partly replace parties' own efforts of determining an aggregate rate in some of the small number of cases in which parties would anyway have chosen to perform a top-down analysis. The availability of such a rate *may* also motivate parties to more often perform top-down analyses to complement (and more rarely to replace) other methods of determining a FRAND rate. The aggregate effect on parties' total expenses in SEP licensing negotiations is impossible to predict, but likely to be small and positive. In any event, whether the availability of an aggregate royalty rate induces parties to spend slightly more or slightly less in the conduct of SEP licensing negotiations is not decisive. It is economically much more relevant to assess whether an increased reliance on top-down analyses in the determination of FRAND rates sets appropriate economic incentives.

Finally, in the third function, the aggregate royalty available from the competence centre would not only be used *voluntarily* by parties of SEP licensing negotiations looking for objective benchmarks to be used in a FRAND determination. Rather, it could also be held against SEP licensors to constrain the rates that they may charge. That is, the availability of an aggregate royalty from the competence centre could make it difficult or impossible for SEP licensors to request royalty rates that are incompatible with this aggregate rate. Clearly, some of the expected benefits of the proposal (such as curbing the potential for royalty stacking and hold-up) can only be achieved if such binding effects arise.

While the expert panel's opinion on an aggregate royalty is explicitly described as "non-binding", it seems intended to be used by courts as a binding cap on individual SEP licensors' royalty rates.⁵² The Commission apparently intends to avoid the legal implications of a binding aggregate royalty (including the possibility for SEP licensors to appeal); while still producing legally binding effects. It is likely, however, that courts would see through this attempt. In this case, they may either deny any legal effect to the aggregate royalty (including as a "reference point"), or require that the aggregate royalty determination is open to be appealed in courts.

⁵¹ Analyses of comparable licences would often be required anyway to assess the non-discriminatory character of the offer.

⁵² This ambiguity regarding the binding nature of aggregate royalties is perhaps most apparent in the proposal by Regibeau et al. (2016): "Two specific and alternative mechanisms could be used to set up such aggregate caps. The first one would be to make this total royalty cap an SSO commitment to which all members must subscribe. The second one would be to require a SSO declaration but to not make it a formal commitment for the SEP-holders. In the second (weaker) version of the mechanism, ex ante declaration could serve as a reference point, including by the Courts." What the Commission seems to have in mind is a version of the "weaker version", where aggregate royalties are formally non-binding, but would nevertheless be held against SEP licensors when used as a "reference point" by courts: "In case licensing negotiations fail, an aggregate royalty would also facilitate the work of conciliators and judges by providing a clear reference maximum price for using a standard." [p 45 Impact Assessment Report].

More generally, it is unlikely that an opinion supported by two out of three randomly picked experts would be given much weight by courts to determine whether a SEP licensor's royalty offers were FRAND. Even if EU courts could be swayed to regard these expert opinions as essentially defining a cap on FRAND royalty offers, SEP licensors may assert their SEPs and seek FRAND determinations for global SEP licences in non-EU courts. There is no realistic prospect that the competence centre's aggregate royalty would have significant effects on these non-EU legal proceedings. An expert opinion available from the competence centre stating that the aggregate royalty rate should be low may thus have the effect to drive SEP holders to resolve their SEP licensing disputes in non-EU venues. In this case, there is a risk that the aggregate rate available from the competence centre may lull implementers into a false sense of security, as implementers may still be exposed to royalty requests exceeding the stated aggregate royalty.

It is also possible that the expert opinion would be considered truly non-binding, whereas SEP holders' own notifications of aggregate royalties are expected to be interpreted as binding commitments. In this case, however, SEP holders would have no incentives to make such binding commitments in order to evade or influence experts' non-binding opinions. Thus, the nudge intended to encourage SEP holders to submit meaningful aggregate royalties would be ineffective.

Will the process result in economically efficient FRAND rates?

The Commission's Impact Assessment thus considers three potential benefits of the proposed mechanism for aggregate royalty announcements. As discussed, each of these potential benefits is doubtful, or at least significantly overstated. One economically potentially more relevant effect of aggregate royalty rate announcements, however, is not addressed: whether they will result in the determination of economically efficient FRAND rates.

Already in its 2017 Communication on SEPs, and again in the Draft Regulation and accompanying Impact Assessment Report, the Commission emphasises the transaction costs and the timing and duration of SEP licensing negotiations. Nevertheless, transaction costs arising in SEP licensing negotiations are only one dimension of the overall economic efficiency of a SEP licensing framework. A much more important question is whether SEPs are licensed at rates that are economically appropriate. Such rates need to be sufficiently high to compensate SEP holders, thus preserving incentives to innovate and make patented technologies available for inclusion into technology standards. At the same time, rates must not be so high as to discourage producers from incorporating certain innovative technologies into their products.

It is not straightforward to determine FRAND rates that generate sufficient revenue for all patent holders, without over-burdening any implementers. Some companies are much more reliant on patent licensing revenue than others to earn a return on their R&D contribution. Moreover, some inventions add much more significant value to a standard than others and some inventions result from much more complex and costly R&D efforts than others. Furthermore, some products benefit very significantly from a certain standardised technology, whereas the same standardised technology may contribute much less significantly to the value of a different product. If all implementers paid the same aggregate rate, some implementers would no longer find it profitable to implement the standard. This is because a rate that is

modest for certain producers may already be excessive for others. At the same time, if royalties were distributed among SEP holders according to the number of patents, certain technologies would no longer be developed. This is because a per patent rate that is appropriate for some inventions may be insufficient for others.

The existing market for SEP licences certainly is not perfect, and does not produce economically optimal FRAND rates in every circumstance. Nevertheless, bilateral negotiations generally succeed in establishing aggregate royalty burdens that allow different standard implementations to exist in the market. One reason for this is that licensors generally have an incentive to focus their limited resources on asserting SEPs against the most profitable implementations. Furthermore, licensors have no interest in excluding certain implementers, which would reduce the market for their standardised technologies. The existing market also allows different SEP holders to use their patents in different ways, e.g. to collect a royalty revenue, or secure freedom-to-operate for their own products.⁵³

It is certainly possible that the determination of an aggregate royalty for a certain product may provide a relevant indication for a FRAND rate for an SEP licence. To determine an appropriate aggregate royalty, it would be necessary to determine the economic value that the standardised technology adds to the specific standard implementation. Existing economic methods, such as hedonic regression or demand systems, observe this economic value from the product market. By contrast, there are no “objective indications” based on which an aggregate royalty may be determined prior to the formation of a product market for the products implementing a standard. Economists do not stipulate what the value of tradable goods *should* be, but observe such value from prices that form in a relevant market. Even if the experts asked to deliver an opinion on an aggregate royalty for a certain standard and use case already had the benefit of data on product prices and demand, the resources foreseen by the Commission (240 hours of work, i.e., 80 hours or 2 work weeks per expert) seem inadequate for a comprehensive economic analysis. Perhaps most importantly, the determination of one single aggregate royalty for a standard and use case appears to preclude the important price differentiation between different products benefiting from the standardised technology to different extents.

Last but not least, all FRAND rate determinations based on an aggregate royalty require a methodology for apportioning the aggregate royalty to different licensors. There is a clear prospect that the Commission’s proposal would invite FRAND rate determinations based on assessed counts of confirmed SEPs. It cannot be stressed enough that counting patents does not provide a reliable or relevant indication of the value of a technology. Even if there was an economically adequate aggregate royalty, apportioning that aggregate royalty among SEP holders by numerical proportionality to their confirmed SEPs would still result in inadequate FRAND rates. If, on the other hand, there is no clear process for apportioning the aggregate royalty to different licensors, the aggregate royalty would prove to be of little use for the determination of actual FRAND rates.

Overall, the most important question (will the availability of guidance on an aggregate royalty from the competence centre result in appropriate FRAND terms?) has not been addressed in the Commission’s Impact Assessment. While a full-fledged assessment of these potential effects is inherently difficult, there are good reasons to be concerned that innovation incentives may be negatively affected.

⁵³ A SEP holder that lacks the resources to license its SEPs effectively may transfer its patents to a different licensor, as approx. 20% of declared (potential) SEPs are re-assigned from their original assignees.

Broader policy assessment

In the previous section, I have assessed whether the aggregate royalty mechanisms proposed in the Draft Regulation are likely to generate meaningful announcements of aggregate royalties, produce significant transaction cost savings, and facilitate the determination of economically appropriate FRAND royalty rates. In this section, I assess the broader policy context, including the dynamic and geopolitical effects of the aggregate royalty proposal; as well as its interaction with other aspects of the Draft Regulation.

Dynamic effects

The Commission's impact assessment largely takes a static view; i.e., it assesses how a situation in which the proposed mechanisms are in place compares to the current situation.

Nevertheless, the proposed mechanisms would take shape over an extended period of time. As seen above, numerous aspects of the proposal are open to disagreements and diverging interpretations. Therefore, case law and implementation practices are required to provide guidance. Parties may be unsure how to utilise the new mechanisms, and the legal value of any announcements may be unclear for an extended period of time.

Furthermore, while the proposal is intended to be limited to "new" standards and use cases, it is not clear what this means in practice – would for instance 5G cellular communication technology be excluded from the scope of the Regulation, as there already are 5G standards and implementations? Alternatively, would every new release and new use case of 5G re-open the window for possible new announcements of aggregate royalties? If existing, but recent, technologies such as 5G were excluded, the proposal would only begin to have an effect in many years. Even when the next generation technologies will be implemented, these new technologies will likely also utilise already existing patented technologies.

If, on the other hand, existing but recent technologies such as 5G are included in the scope of the proposal, the Draft Regulation may have a chilling effect on ongoing SEP licensing negotiations. Negotiating parties may adopt a "wait and see" approach to assess the effect of the proposed mechanisms on their licensing negotiation. There may also be uncertainty regarding the validity of already concluded licensing agreements. This may be particularly true if agreements are concluded on terms that may not be compatible with a subsequent "reasonable aggregate royalty" announcement.

SEP licensing practices, as well as firms' decisions to contribute to standards development, are also dependent on firms' anticipations of future regulatory changes. The general regulatory framework for SEP licensing has been characterised by a relative stability and gradual clarification. The EU Commission's proposed sweeping regulatory overhaul of SEP licensing may trigger regulatory changes in other regions; it may also require further regulatory changes or adjustments within the EU.

Experience from the US offers two cautionary tales in this regard. In 2013 the U.S. Department of Justice (DoJ) and USPTO issued a policy statement on remedies for SEPs subject to FRAND commitments. The

statement led to a decade of partisan debates, during which two additional (and conflicting) statements were issued. Finally, the government decided to leave the responsibility for determining remedies for SEPs to courts. Similarly, after the IEEE Standards Association changed its patent policy in 2015, multiple additional tweaks had to be made to the new policy, while several patent owners declared that they were not prepared to license their patents under the terms of the new policy. In 2022, the IEEE announced a new update to its patent policy, essentially vacating the thrust of the changes from 2015. In both cases, policy initiatives that were not able to garner a consensus among relevant stakeholders turned out to be short-lived. These initiatives only created controversy and uncertainty instead of providing any guidance or clarification.

Even if the proposed mechanisms work as intended and would not be subject to future revisions, it would take significant time for experience with the new mechanisms to accumulate. Much of the existing case law, guidance, and comparable licences would become less useful to guide parties' conduct in SEP licensing negotiations.

This is significant in particular when considering past statements from stakeholders and industry experts. As we have seen, important stakeholders previously endorsed the concept of SEP holder negotiations on aggregate royalty rates. Nevertheless, it is important to recall that this was before any court had ever determined a FRAND rate for an SEP licence. Over the last 15 years, the Court of Justice of the European Union in *Huawei v. ZTE* created a widely respected framework for the resolution of SEP licensing disputes.⁵⁴ Under this framework, hundreds of court decisions and thousands of concluded SEP licences have contributed to a solidified understanding of FRAND licensing obligations. In 2006 or 2007, industry experts reasonably suggested that concerted announcements from SEP licensors may offer potential standard implementers some clarity on future SEP licensing conditions. Nevertheless, this has turned out to be the road not taken. Still, over the last 15 years, disagreements over the meaning of FRAND have become more incremental, and the incidence of SEP litigation has decreased. Also, the room for disagreements over FRAND rates for specific licences has narrowed (see Baron et al., 2023; p. 76). Any regulatory action on FRAND determinations should build on the gradual progress that has been achieved, rather than proposing mechanisms having no basis in currently existing SEP licensing practices.

Strategic effects / international dimension

Another important aspect of the Draft Regulation is its international dimension. While the Commission proposes the creation of several new mechanisms to facilitate SEP licensing in the EU, most SEP licences are global in scope. The global nature of SEP licensing may reduce the effectiveness of the mechanisms proposed by the Commission, as parties may decide to resolve their licensing disputes outside the EU in order not to be bound by the new mechanisms. Thereby, the proposal may weaken the role of EU courts as venues for global SEP dispute resolution.

Perhaps most significantly, the Commission's proposal of mechanisms for the determination of reasonable aggregate royalties may inspire governments in other world regions to also intervene in the

⁵⁴ <https://curia.europa.eu/juris/liste.jsf?num=C-170/13>

determination of FRAND royalty rates. In the absence of inter-governmental coordination at the global level, such efforts in different world regions may result in different and potentially incompatible regulatory requirements applying in different parts of the world. Furthermore, there is a clear risk that foreign governments' initiatives may fail to respect EU companies' rights. It may become significantly more difficult for the Commission to defend the legitimate rights of EU companies against foreign governments' interference in SEP licensing (such as the ongoing action at the WTO concerning China's practice of anti-suit injunctions), as foreign governments can point to the example set by the Commission's own interference with global SEP licensing practices.

In order to preserve the international cohesiveness of the SEP licensing framework, government actors have traditionally eschewed top down regulatory interventions. Rather, government regulation provides a general framework, and more specific policy mechanisms are created in SDOs (Baron et al., 2019). The Commission's proposals of new mechanisms for the determination of FRAND royalties are a clear departure from this historically very successful 'tandem approach'. With its Draft Regulation, the Commission takes on the role to propose (or impose) new specific mechanisms not currently used by SDOs and their stakeholders.

Role for the overall policy effort

When assessing one aspect of a proposed regulation, it is important to also take into account the interplay between different provisions. In particular, are articles 15-18 necessary for the structural integrity of the general Draft Regulation? Or can the overall goals of the Commission also be achieved without these provisions?

It is clear that there is a policy complementarity between an aggregate royalty and a certain interpretation of the role of the SEP register, also created through the Draft Regulation. The determination of an aggregate royalty, and the existence of a register that can be used for "patent counting", together can facilitate a "top down" approach to the determination of FRAND royalty rates. "Patent counting" has been particularly relevant in the small number of SEP licensing disputes in which courts performed a top-down analysis (such as *Unwired Planet v Huawei*⁵⁵, *In re Innovatio*⁵⁶, *TCL v Ericsson*⁵⁷).

SDOs elicit disclosures of potential SEPs primarily in order to ensure that all potential SEPs are available for licensing on terms compliant with the SDO's patent policy. Nevertheless, SDOs' disclosure databases are now widely used also for other purposes. This includes counting declared potential SEPs to measure companies' "leadership" in standards development. This approach is wrong for many different reasons. Clearly, many of the disclosed potential SEPs are not actually essential. Also, and more importantly, the value and significance of patents (including SEPs) is highly skewed. This skewed distribution fundamentally limits the usefulness of counting patents.

There are however also other, more sensible uses of disclosure databases. Disputes regarding the essentiality of individual patents are common in SEP litigation. More generally, SEP licensing negotiations

⁵⁵ Supra note 19

⁵⁶ Supra note 21

⁵⁷ Supra note 7

often have a “technical phase”, in which parties discuss the characteristics of the patent portfolio.⁵⁸ Parties may thus use SDO disclosure databases to identify a licensor’s potential SEPs, so that the potentially most relevant patents can be more easily identified for further analysis. Nevertheless, these sensible uses of SDOs’ databases are made more difficult by companies’ incentives to over-populate the databases in order to generate an inflated perception of the size of their portfolio.

In this context, it could be useful to create a leaner SEP register based on more informed disclosures made once a patent is granted and the standard specification is final. Furthermore, checks of randomly selected samples of these patents may discipline companies’ incentives to over-disclose. Such a register may make it easier for stakeholders and third parties to find useful information. If, on the other hand, the register had the effect of further encouraging “patent counting”, it may well become counter-productive. Such use of the database would generate even stronger incentives to over-declare. Essentiality checks can only limit, but not eliminate, these incentives. This is because essentiality checks on randomly drawn samples are likely to produce unreliable estimates of the true essentiality in different portfolios. Essentiality checks are inherently prone to produce inconsistent results, and uncertainty from possible assessment errors compounds uncertainty due to random sampling error (Mallinson, 2022; Baron, 2023).

Articles 15-18 are thus not helpful or necessary for the overall policy effort. Rather, they are detrimental to other, more carefully considered aspects of the Draft Regulation.

Conclusion

I am grateful to the European Commission for the opportunity to comment on its Draft Regulation, and for the numerous opportunities I had to provide input over the past years. Without any doubt, the Draft Regulation is an ambitious and bold policy package. If enacted, it would probably constitute the most significant change to the process of SEP licensing over the past decades.

It is natural that such an ambitious and complex policy proposal receives mixed reception, and that some parts of the proposal are criticised more than others. Nevertheless, the Draft Regulation is particularly uneven. While there is intensive debate regarding the specific aspects of the Commission’s proposed SEP register, many stakeholders believe that regulatory action improving SEP transparency has the potential to be beneficial. By contrast, the Commission’s proposed interventions in the process of determining FRAND rates are hugely controversial.

To some extent, any proposal aiming to affect the determination of FRAND rates would be controversial. The Commission’s proposals, however, appear particularly one-sided. On one hand, the proposed mechanisms for determining a ‘reasonable aggregate royalty’ define a maximum burden that implementers should reasonably have to bear. On the other hand, they create no new incentives for implementers to actually pay a reasonable royalty, and offer no guarantee to SEP holders to earn a reasonable aggregate royalty revenue.

⁵⁸ See Baron et al. (2023), p. 25

The proposal not only appears one-sided, but also unnecessary. The determination of reasonable aggregate royalties is a solution for a problem that does not exist. The empirical record on the effective royalty stack is clear – aggregate royalty burdens on implementers are well below the levels predicted by “royalty stacking” theories. Therefore, concerns that promising new technologies may fail to reach the market because of manufacturers’ potential exposure to excessive royalty demands appear increasingly unfounded.

Instead of producing the significant cost savings predicted by the Commission’s Impact Assessment, negotiations between different companies on an aggregate royalty may result in different, incompatible and largely meaningless statements. Some of the more significant potential effects of such negotiations are concerning, such as the potential for net licensees to use the process for concerted actions to depress royalty levels.

Overall, I would encourage the Commission, and/or the legislative bodies of the EU, to withdraw or delete Articles 15-18 of the Draft Regulation. These controversial and one-sided provisions are a distraction from some of the more promising aspects of the Draft Regulation. There is no objective urgency or need to rush the adoption of the Draft Regulation as proposed. It is possible to develop a more balanced policy package around the more nuanced proposals in the Draft Regulation.

The EU should aim to make an incremental, yet significant, contribution to the gradual improvement of the global SEP licensing framework. Every policy attempt of the past decades to more fundamentally alter the process of SEP licensing has proven short-lived and unsustainable. In the absence of a globally concerted reform, any major EU-specific reform would only isolate the EU and reduce its role in the global SEP licensing. The need for a dramatic overhaul is now even more dubious than before – the industry has learned to make SEP licensing work. As a result, litigation is decreasing, whereas standardisation and innovation are thriving.

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