

GETTING PRICING RIGHT ON DIGITAL MUSIC COPYRIGHT

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ABSTRACT. This paper provides an overview of economic approaches to the pricing of mechanical royalties for copy-protected music works. It argues that principles for such pricing can be provided usefully from principles of pricing access to essential facilities. In particular, the structure of the royalty should be such that the royalty level does not change if the business model of downstream entities (notably, digital music streaming platforms) changes (i.e., neutrality) and the level of the royalty should ensure that the copyright holders receive a return equivalent to their next best alternative in reaching consumers (i.e., opportunity cost). Ways of using benchmarking to derive the relevant opportunity cost are then discussed including the use of methods inspired by economic bargaining approaches such as the Shapley Value.

1. INTRODUCTION

Around the world, the pricing of royalties for copy-protected music are subject to a variety of regimes including both regulation, market outcomes and combinations of the two. In the United States, the claimants on a particular digital sound recording include the record artist (or their label) and the composer of the work (or their publisher). The sound recording is not subject to regulation but the composition is partially regulated. When a composition is performed, the composer earns PRO fees from various forms of radio – wireless, Internet and satellite. When a composition is copied, it earns a mechanical license. These licenses are a throwback to the era of player pianos and were subject to many decades of regulation. Mechanical license fees are set by the Copyright Royalty Board which is part of the US Library of Congress. These fees cover physical phonorecords and permanent digital downloads (generally with a fixed per copy rate) and more recently interactive streaming. These are

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downloads akin to Internet radio but because the user can choose what to ‘play’ they are not part of the PRO fee regime.

Mechanical license fees for interactive streaming were part of what was termed the Phonorecords II case in 2012 and the more recent Phonorecords III case which was heard in 2017 and a preliminary determination released in early 2018. Prior to 2018, interactive streams were subject to a relatively complex formula for license fees. This formula gave musical works a percentage of music service revenue in some instances while in others it may be a per subscriber rate or a percentage that included payments to labels for sound recordings. This eventually gave rise to a royalty that was paid per play to for each composition. By contrast, the new 2018 determination has opted for a simpler formula where a percentage of revenue or total content costs (depending on which is higher). Importantly, the fees from 2018 are set to rise steadily over the next five years eventually leading to fees that arrest a long-term decline in real mechanical fees paid to composers.

In 2015, Judge David Strickler lamented the lack of economic principles that were guiding these decisions (see Strickler, 2015). He noted that the Copyright Royalty Board could only evaluate fees based on proposals put forward by participants and that this made it difficult to establish consistent principles by which such pricing might be determined. Interestingly, Strickler did observe that in other regulatory environments, principles had emerged. He noted that the pricing of access to essential facilities had similarities to the determination of copyright royalties and wondered of pricing rules that had been established in those environments could be applied. He singled out the Efficient Component Pricing Rule (or ECPR) as one possible candidate.

Given this, and motivated by my own experience in researching and advocating for various rules of access pricing, here I examine whether rules from that environment could be fruitfully used in the determination of copyright royalty licensing. I argue that, while the particular formulae cannot readily be applied, it is possible to use the principles underlying those rules

to inform as to the structure of digital music pricing. As for the levels of those prices, some benchmarking might be appropriate.

2. BRIEF BACKGROUND ON MECHANICAL ROYALTIES

The U.S. Copyright Office acknowledges that royalty rates for musical works have been historically depressed by compulsory licensing and presents significant evidence to that effect in its 2015 Music Marketplace Report.¹ Although licensors and licensees of composition rights can negotiate outside of the compulsory system, the statutory rate acts as a ceiling to those negotiations.²

Mechanical royalties were established in the 1909 Copyright Act, which granted songwriters the exclusive right to reproduce and distribute phonorecords. However, the exclusivity of those rights would have meant, by definition, that parties wishing to use musical works could be excluded from doing so at the rightsholders' discretion, triggering fears of anticompetitive behavior by rightsholders. For example, some lawmakers believed that manufacturers of player pianos would obtain exclusive deals with rights owners so that certain compositions could only be purchased in conjunction with a certain brand of player piano. This would allow manufacturers of those brands to establish monopoly power over the downstream market. To prevent such a possibility, lawmakers established a compulsory licensing system, whereby any manufacturer of player piano rolls could use protected musical works upon paying the statutory rate of \$0.02 and serving notice to the copyright owner (Mitchell, 2007, at 1239).

It is worth noting that the anticompetitive behavior used to justify compulsory licensing existed in theory only. No manufacturer of player pianos had ever gained monopoly power by securing exclusive access to musical works. Moreover, those fears were not manifest when

¹“There is substantial evidence to support the view that government-regulated licensing processes imposed on publishers and songwriters have resulted in depressed rates, at least in comparison to noncompulsory rates for the same uses on the sound recording side. Setting aside efficiency concerns, the Office does not see a principled reason why sound recording owners are permitted to negotiate interactive streaming rates directly while musical work owners are not.” United States Copyright Office (2015, p. 159), (hereinafter, “CMM”).

²“While copyright owners and users are free to negotiate voluntary licenses that depart from the statutory rates and terms, in practical effect the CRB-set rate acts as a ceiling for what the owner may charge.” CMM, at 29.

Congress passed the Sound Recording Act of 1971,³ which granted copyright holders the exclusive right to the reproduction and sale of sound recordings, as those rights were not subjected to compulsory licensing.⁴ Thus, in order to play the musical works subject to compulsory licensing, interactive streaming services must negotiate for a license for the sound recording of that work. The prediction of anticompetitive theories that gave rise to compulsory licensing has not been borne out to date in markets with similar characteristics.

It is easy to draw parallels between sound recording rights and musical works rights, especially in the context of the interactive streaming market. Both begin with an artist who creates content, and both end with that content being distributed to the public by way of a streaming service. In both cases, an enterprise stands between the artist and streaming service to facilitate transactions. Those enterprises (record companies and music publishers) are both compensated in the same way—through partial ownership of the content. Moreover, the markets in which record companies and music publishers exist are very similar to one another—a handful of “major” companies (each with at least 15% of market share) and a large cohort of smaller, “indie” companies. At the point where recorded content becomes available to the public, however, these two structures cease to be parallel and begin to converge. That is to say, sound recording rights and musical works rights for streaming are two sides of the same coin—one right cannot be delivered to listeners, or hold any value, absent the other right.

Despite the parallels and ultimate convergence of sound recording and musical works rights, one artificial yet very important distinction exists between the two. That is, sound recording

³A limited copyright in sound recordings for the reproduction and sale of such recordings was created by the Sound Recording Act of 1971. See House Report 92-487, Committee of the Judiciary, September 22, 1971, at 2, accessed October 18, 2016, <http://copyright.gov/reports/performance-rights-sound-recordings.pdf>. The 1978 Act merely clarified and limited the scope of that right (excluding performance) and directed the Register of Copyrights to prepare a report on whether performance should also be added to the right under a compulsory license. See House Report 94-1476, Committee of the Judiciary, September 3, 1976, at 106, accessed October 21, 2016, http://www.copyright.gov/history/law/clrev_94-1476.pdf.

⁴The relevant House Report does not mention that any anticompetitive or antitrust arguments were presented in support of compulsory licensing, but notes that the idea was rejected on other grounds. House Report 92-487, Committee of the Judiciary, September 22, 1971 at 4.

royalty rates are freely negotiated between the parties, whereas musical works rights must be made available at the statutory rate.

Services benefit from being able to rely on a statutory royalty rate being available without negotiation. The statutory license shelters the services against exercise of market power by a copyright holder. A poorly structured rate can distort the market, either expropriating value from rightsholders or discouraging competition.

A statutory rate that was so high to be exclusionary would be equivalent to having no statutory rate. A rate that was too low would expropriate value from the rightsholders, but could also distort competition by encouraging inefficient services. But a reasonable rate would establish a ceiling for guaranteed access, below which services and publishers could negotiate if more efficient pricing arrangements existed that made both sides better off, for example for new services or business models.

3. ECONOMIC PRINCIPLES FROM ACCESS PRICING

In this section, I examine economic principles and regulatory pricing rules developed and studied in other markets that are relevant in this setting. In particular, I look to the economic literature on regulatory pricing for essential facilities.

Section 115(c)3(C) of the Copyright Act states that “[P]roceedings under chapter 8 shall determine reasonable rates and terms of royalty payments.”⁵ Economists generally look to normally functioning, unconstrained markets to assess prices or to set regulated rates. Indeed, “the single most widely accepted rule for the governance of the regulated industries

⁵Section 801(b)(1) calls for the Copyright Royalty Judges to “make determinations and adjustments of reasonable terms and rates of royalty payments [...] calculated to achieve the [certain policy] objectives.” The 801(b)(1) factors are: “(A) To maximize the availability of creative works to the public. (B) To afford the copyright owner a fair return for his or her creative work and the copyright user a fair income under existing economic conditions. (C) To reflect the relative roles of the copyright owner and the copyright user in the product made available to the public with respect to relative creative contribution, technological contribution, capital investment, cost, risk, and contribution to the opening of new markets for creative expression and media for their communication. (D) To minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.” 17 U.S.C. § 801(b)(1) (2010).

is regulate them in such a way as to produce the same results as would be produced by effective competition, if it were feasible.” (Kahn, 1988, at 17/I). Thus, in any market that is not functioning as an effectively competitive market would, the so-called market failure that prevents it from functioning normally is the usual focus of regulatory intervention. Absent market failure, markets are presumptively superior to regulators in establishing prices that reflect fair value.

The term “reasonable rates” can be read as a relatively broad definition, but from an economic perspective would still be consistent with free market outcomes.⁶ In this setting a free market would be a hypothetical market for mechanical rights, unconstrained by compulsory licensing, but not one that meets any specific, narrow definition of competitiveness. In other words, a reasonable rate would be expected to prevail in a reasonably competitive hypothetical market for mechanical licenses. Furthermore, such a rate would be expected to reflect the fair value of the copyright. A desirable property of prices that result from free markets is they reflect the fair value of the goods or services being transacted.⁷ Based on the reasonable competitiveness of the market for sound recording licenses with interactive services, a hypothetical market in which mechanical licenses were freely negotiated with interactive services rather than compulsory would produce rates that reflected the value of the copyrights.

Much of economics was developed with the goal of understanding market outcomes when buyers and sellers act in a voluntary manner; that is, when buyers and sellers can withdraw participation from the market if they so choose.⁸ While much economic analysis is understood in terms of aggregate constructs like market demand and supply relations, other situations, such as those in which the market consists of few buyers and few sellers, need to be analyzed at the transaction level. For that sort of analysis, economists rely on notions that arise when two

⁶Benchmarking prices against free market rates is an approach used in other settings including regulatory price setting and transfer pricing (the “arms-length standard”). See, e.g., Kahn (1988). See also IRS transfer pricing regulations: 26 CFR 1.482-1 “Allocation of income and deductions among taxpayers,” <https://www.law.cornell.edu/cfr/text/26/1.482-1>.

⁷The classic Efficient Market Hypothesis predicts that market prices will be fair, since those prices will incorporate all of the information available to market participants. See, e.g., Brealey et al., 2008, at p. 359.

⁸See, e.g., Kahn (1988) at p.1/I. “The coordinating and controlling mechanism is the competitive market and the system of prices that emerges out of the bargains between freely contracting buyers and sellers.”

parties negotiate the terms of a transaction. Thus, rather than buyers and suppliers acting in an arms-length and relatively anonymous manner in a market, often a buyer and seller will negotiate in an interrelated manner. This is not to say that the outcomes in anonymous, large markets and small, bilateral negotiations are unrelated, but that the choice of starting point for economic analysis depends on the realities of the economic situation.

In this case, a normal functioning market would involve negotiations between a licensee and a licensor of copyright-protected musical works, outside the influence of any compulsory licensing regulation. A negotiation perspective is often appropriate precisely because the licensor is the exclusive rightsholder giving them a monopoly position with respect to the works that they own. In effect, all licensees must deal with that particular licensor. Assessing proper royalty rates and terms involves understanding that negotiation as it might arise if market conditions permitted it.

Starting with a bilateral negotiation does not preclude incorporating the effects of competition. The impact of competition is felt by both sides to a negotiation. For a buyer, if they have more than one seller that they can negotiate with, the sellers compete and the likely result has terms more favorable to the buyer. If there are multiple buyers that a seller can negotiate with to make their work available to final consumers, then the buyers compete and the likely result has terms more favorable to the seller. For there to be effective competition, therefore, both the buyer and seller must have reasonable outside options to engaging in the transaction.

Those outside options constrain the prices each would be willing to accept. For instance, if a buyer was willing to pay \$10 to access a work, but could access the work from another seller for \$5, the maximum price the buyer would accept would be \$5. Similarly, if the licensor could earn \$5 from an alternative source instead of licensing the work to this particular buyer, the licensor would not accept less than \$5 in this negotiation, assuming they could only license this product to one licensee. If both conditions were true, then there would be no ‘wiggle

room’ in this negotiation and the likely price would be \$5. Under perfect competition it is often noted that prices are determined entirely by such competitive substitutes on each side of the market. Consequently, one can consider an outcome in a negotiation like this an outcome that arises under perfect competition.

It is my understanding that the reasonable royalty rate standard of the Copyright Act does not dictate an outcome of perfect competition, but of competition that would prevail in the market if licensing musical works were not compulsory. In my opinion, this means that we should examine hypothetical negotiations over mechanical royalties in the context of licensing negotiations where both the licensor and licensee have strong outside options. For a licensor, this means relating their decision to opportunity costs rather than physical costs in a manner I will outline in more detail below.

While a market for non-compulsory licensing of musical works is hypothetical, the market for non-compulsory licensing of sound recordings provides a model for normal market conditions that should determine statutory mechanical rates. This market for non-compulsory licensing of sound recordings is not perfectly competitive, but both the licensors and licensees have strong outside options (i.e., it is a reasonably competitive market).⁹

The labels have the right to refuse to license their sound recordings to particular interactive streaming services and instead to continue to distribute their sound recordings through other competing channels. The services have the ability to develop offerings with different content and pricing through which to distribute the labels’ competitors’ sound recordings. The outcome of negotiations between the parties in this market has resulted in reasonable rates that

⁹The Federal Trade Commission’s (FTC’s) review of the Universal EMI merger provides additional evidence of the ability of unconstrained licensing negotiations with interactive streaming services to produce reasonable rates while delivering wide access to recorded music. The FTC investigated whether the transaction would lead to higher costs to interactive streaming consumers or a more limited selection of recorded music. The merger increased market concentration, but did not raise concern over the labels’ bargaining leverage in part because the labels’ licensed sound recordings were found to be complements not substitutes. “After a thorough investigation into the likely competitive effects of the merger, Commission staff did not find sufficient evidence that the acquisition would substantially lessen competition in the market for the commercial distribution of recorded music.” Statement of Bureau of Competition Director Richard A. Feinstein In the Matter of Vivendi, S.A. and EMI Recorded Music, FTC, September 21, 2012, accessed September 17, 2016, https://www.ftc.gov/sites/default/files/documents/closing_letters/proposed-acquisition-vivendi-s.a.emi-recorded-music/120921emifeinsteinstatement.pdf.

reflect the value of these outside options to each party. It is only due to the asymmetric treatment of musical works under the law that publishers are unable to negotiate comparable deals in which they could exercise their outside options and obtain a reasonable mechanical rate (CMM, at 149).

4. RELATIONSHIP WITH ECPR

It has been noted that the determination of royalties for compulsory intellectual property licensing exhibits parallels with the setting of regulated prices for access to essential facilities (see e.g., Strickler, 2015, and Gans and King 2004). Here I explore that relationship specifically because it is an area of economic study and practice that has generated a number of pricing solutions that are likely to be relevant in this context.¹⁰ This will lead to principles that, in my opinion, should inform the royalty rates and terms being determined in these proceedings.

To understand the context for regulation of access to essential facilities, consider a line of rail infrastructure that goes from point A to point B . The infrastructure is owned by a rail operator who, absent regulation, has a monopoly on rail traffic between those two points. The monopolist is able to charge a price (per customer), P , for use of the rail service. This price might itself be set by regulation or alternatively by conditions in a downstream, more competitive, market. The marginal cost per customer is C ($< P$). If the rail operator has N

¹⁰Separate from access pricing rules, another commonly employed regulatory pricing rule is Ramsey pricing. This rule has been used to set prices in certain regulated monopoly markets and has the property of maximizing total welfare conditional on a target profitability constraint. Prices are set such that the markup above costs is inversely proportional to the elasticity of demand. This means that less price sensitive products (i.e., products with low price elasticity) are priced higher. Products become more inelastic the more desirable or indispensable they become. This is consistent with the result of competition in differentiated product markets in which markups above costs are inversely proportional to the elasticity of demand (a relationship expressed as the Lerner Equation). As an approach to pricing mechanical royalties, without reliable estimates of elasticities and costs, this method of setting prices is not necessarily useful. Moreover, conceptually, Ramsey pricing is a means of allocating the fixed costs of providing infrastructure over a number of different uses or channels. While it is possible to consider the creation of a musical work as a fixed cost, there are many additional costs that vary and involve the discretion of different parties. Thus, they may vary from work to work in ways that evolve in unpredictable ways over time. Finally, the different uses for those works are interdependent demand – that is, downloaded music is a substitute for streaming music and vice versa. Thus, it is not only elasticities that are required but cross-price elasticities as well. These elasticities are also likely to be specific to particular works. Ultimately, Ramsey pricing is not well suited to the context of setting interactive streaming royalty rates.

customers, its net profit (that is, net of the costs of the rail infrastructure itself) would be $N(P - C)$.

Suppose another party appears (an independent rail operator) who wants to use the monopolist's rail line but not the rail service. They intend to run their own cars on the rail line but they intend to compete for existing traffic (that is, any of the monopolist's current N customers). It is readily apparent that the monopolist will likely have no interest in permitting this. Faced with this, the independent would have to duplicate the rail line in order to compete. It is to prevent this form of duplication (which would be socially inefficient) that essential facilities law has come into being, the full merits of which do not concern us here.

The essential problem here is that there is no market for "above rail" access independent of the provision of rail infrastructure. The goal of access regulation is to create that market which involves requiring the monopolist to offer a separate service and then to regulate the pricing terms for that service in a manner that leads to more efficient outcomes by preventing incentives to duplicate the infrastructure, while encouraging the continued development of such infrastructure where it is needed.

This regulatory challenge can be mapped to the challenge in these proceedings. For interactive streaming services, musical works are an essential input. In this situation, the rightsholder is the key agent akin to the infrastructure provider who has been forced to grant services access to its intellectual property. The goal is to set pricing terms such that more efficient outcomes result (for example, that services are encouraged to pay for access and license the intellectual property when it is efficient for that to happen). Where it differs is that we are not starting from a situation where the rightsholder is necessarily providing products and controlling access to final consumers. However, I believe that we can still tap into the literature and experience regarding access regulation to inform us as to principles that should apply to any rate structure in these proceedings.

Before doing so, let us consider what price might emerge in the rail line example. If the government were to force the monopolist to open up access to the rail line in this situation, what might be a good price for it to insist on for that access? One option would be to engage in a full accounting of the monopolist's costs associated with the rail line infrastructure and charge the independent a price based on those costs. However, it is often the case that such costs are difficult to measure. In fact, as I will argue below, for the analogous case of intellectual property where the rightsholder plays the role of the monopolist in this story, estimating the equivalent costs would be even more difficult.

For this reason, some economists have proposed a pricing approach that avoids the cost measurement issue entirely (at least for the infrastructure). This is the so-called efficient component pricing rule (ECPR) that is based on the theory of contestable markets (see Baumol and Sidak, 1994). That theory asks: what if access to the rail infrastructure were open, but the monopolist was required to set an access price at a value that would deter inefficient entry into the 'above rail' service? Or to put it another way, what price would the infrastructure owner set if it treated its integrated above rail business as an independent entity?

The answer is simple: the rail infrastructure provider would set a price equal to its opportunity cost of providing access. If an independent comes in and attracts one customer from the integrated monopolist, the monopolist loses the margin, $P - C$. This represents its opportunity cost from providing access (i.e., its lost profit). Thus, the monopolist would set an access price, a , equal to $P - C$.

Given this price, consider the choice of an independent. Suppose that the marginal cost of the independent, c , were greater than C (the monopolist's marginal costs). In this case, if it enters, the independent earns $P - c - a = P - c - (P - C) = C - c$ which is negative if $c > C$. Thus, the independent would not enter if it is less efficient than the incumbent. By contrast,

if $c < C$, the independent is more efficient and earns a profit of $C - c$ in this case (a positive amount). In this case, the independent may enter and earn a positive profit.

Notice that the rule encourages entry precisely when the costs of providing the rail service are reduced by so doing and deters it otherwise. Thus, it has a convenient (productive) efficiency property. However, it does this without having to investigate the full costs of the monopolist in providing the infrastructure. Instead, it just needs knowledge of P (the rail price which should be easily observable) and C (which may require some measurement, but is based on factors capable of being measured presently rather than inferred historically). In addition, if entry occurs, the monopolist still earns $N(P - C)$ and so we do not need to consider whether the regulation is reducing its incentives to invest in infrastructure as the outcome is the same as if the regulation did not exist.

The opportunity cost of licensing musical works to a given interactive streaming service depends on the royalty income lost as a result of doing so. There are numerous potential sources of that lost royalty income, including lost revenue from another interactive streaming service (that may pay higher rates), as well as lost physical sales, downloads and radio/webcasting revenue. A compulsory rate set below the opportunity cost to the rightsholders would distort downstream competition and deteriorate fair royalty compensation to rightsholders. Although the ECPR model does not apply here in its traditional application, as the rightsholders are not themselves in the market providing products and controlling access to final consumers, opportunity cost compensation is a basic but critical principle of fair compensation under the ECPR model that should inform the analysis of rates and structures here.

To summarize, this feature of ECPR, applied to the copyright setting, implies that rates should be set so that the rightsholder is indifferent between licensing to the downstream services or not, which means that where licensing results in lost profits elsewhere, the rate should be set so as to compensate them, in the aggregate.

However, there is another feature that is worth stressing. Because ECPR is designed to be an informationally efficient way of computing prices, it implies that the regulator does not attempt to tailor prices to particular downstream use cases. In the copyright setting, this suggests that upstream and downstream markets should be separated such that rates set upstream do not bias business activity and competition between downstream businesses: in this case interactive streaming services.

As described in the above example regarding rail access, ECPR is agnostic regarding the costs, but it is also agnostic regarding the business activity of independent rail service providers so long as they do not impact on the provider's opportunity costs.¹¹ An advantage of this is that the regulator need not investigate or tailor prices to particular details of the services that downstream firms provide.¹² It is a rule that permits experimentation and innovation on the part of downstream firms and entry by providing non-discriminatory licensing without disadvantaging the rightsholders in their activities through other channels (e.g., alternative streaming platforms, direct sales, downloads).

To align this notion with the language in the music industry, I articulate the principle ("business model neutrality") that the rate structure for mechanical licensing should be neutral with respect to the business model for interactive streaming services. In other words, the rate structure should endeavor to not reference particular business models but instead focus on the fundamental drivers of demand. Neutrality of this form often arises in normally functioning markets when inputs are supplied freely. In the case here, the input is access to a particular work. In other markets, it may be a raw material or other factor of production. It is quite natural for inputs to be supplied and for the supplier to only care about the supply

¹¹Note that this is a feature of ECPR that is not necessarily shared by other access rules (for instance, those based on Ramsey pricing). This is because ECPR aims to ensure the infrastructure provider is 'made whole' by the provision of access and not that its ultimate incentives to invest in that infrastructure are enhanced.

¹²See, e.g., Dirlam and Kahn (1954), at p. 28. One way this is often described in regulatory contexts is a desire for competitive neutrality. Again, like ECPR, this often has its origins when there is a vertically integrated provider competing with independent downstream firms. Here the context would be interactive streaming services competing with revenue sources that music rightsholders receive through other channels. See, Gans and King (2005), at pp. 128-136.

price and terms and not what use the input is put to. For instance, a supplier of electricity does not care about whether a consumer has a large refrigerator or uses air conditioning. Instead, it cares about the total amount of electricity purchased and when. The principle of business model neutrality is analogous in that it calls on the rightsholder to care only about whether their work is used (via streaming or access) and not where it is used nor whether it is used in a certain context.

In the Phonorecords I and II proceedings, licensees and licensors negotiated a variety of different rate terms and structures to address a variety of potential business models for interactive streaming.¹³ In effect, these rates tried to ignite a fledgling industry, and the participants expressly stated that the rates and terms should not be precedential, and that new rate proceedings should look at the matter *de novo*.¹⁴

Consistent with the understanding that the current rate structure was envisioned to have a very specific and time-limited application, it contains a set of rates that are a snapshot in time. The 2012 regulations in Subparts B and C contain ten different rate structures for ten different specific business models.¹⁵ I understand that some of these models are still commonly used (e.g., standalone portable subscription mixed use), while others have commonly been merged with other plans or are not as commonly used (e.g., standalone non-portable mixed use, purchased content locker). In place of more outdated models in the regulations, there are new types of business models on the market that do not have their own customized regulations.¹⁶

¹³See, e.g., “§ 385.13 Minimum royalty rates and subscriber-based royalty floors for specific types of services.” Final Determination of Rates and Terms, In the Matter of Mechanical and Digital Phonorecord Delivery Rate Determination Proceeding, Docket No. 2006-3 CRB DPRA, Copyright Royalty Board. January 26, 2009, at 4532, accessed September 17, 2016. <http://www.loc.gov/crb/proceedings/2006-3/dpra-public-final-rates-terms.pdf>.

¹⁴See, e.g., “In any future proceedings under 17 U.S.C. 115(c)(3)(C) and (D), the royalty rates payable for a compulsory license shall be established *de novo*.” Final Determination of Rates and Terms, In the Matter of Mechanical and Digital Phonorecord Delivery Rate Determination Proceeding, Docket No. 2006-3 CRB DPRA, Copyright Royalty Board. January 26, 2009, at 4536, accessed September 17, 2016, <http://www.loc.gov/crb/proceedings/2006-3/dpra-public-final-rates-terms.pdf>.

¹⁵Useful charts of the different rates are found at “Rate Charts,” Harry Fox Agency, accessed October 24, 2016, https://www.harryfox.com/find_out/rate_charts.html.

¹⁶For example, Cricket Wireless’ interactive streaming deal and Amazon Prime Music fall into the same category of Bundled Subscriptions for the purposes of mechanical royalty payment calculations despite offering different services. Amazon Prime provides users with access to movies and shipping deals, whereas Cricket Wireless is bundled with a phone service.

This type of structure is understandable as a specific negotiation at a specific point in time, intended to boost a handful of proposed business models to see whether any would catch on. However, this is not a sound approach to setting blanket rates across the country for five years of a dynamic industry that is in a constant state of disruption and evolves quickly.

A rate structure designed around prevailing interactive streaming service business practices is also not business model neutral. Tying a rate structure to current service offerings can adversely affect competition in the downstream market. The success or failure and exit or entry of businesses with different business models should be determined by competition, not by the structure or level of compulsory rates.

As a case in point, the current regulations allow for music subscriptions to be sold as part of a bundle with a product, such as a phone. The mechanical royalty per-subscriber minimum for this type of service is 50% of the minimum for standalone portable subscriptions.¹⁷ Thus, where end-user usage is precisely the same, a service could pay publishers and songwriters half as much just by packaging the sale of the service in a particular way. A rate like this, that favors a particular business model, may have made sense as a limited-term compromise to encourage a new market, but is not likely to be efficient because it distorts competition in the downstream market for the term of the statutory rates. Rather, a rate structure that applies equally to all business models would encourage efficiency via free and fair competition downstream.

See “Deezer Cricket,” Cricket Wireless, accessed October 23, 2016, <https://www.cricketwireless.com/support/plans-and-features/deezer-product/customer/deezer-usa.htm>; “What is Prime Music,” Amazon, accessed October 23, 2016, <https://www.amazon.com/gp/help/customer/display.html?nodeId=201530920>.

¹⁷See, 37 C.F.R. 385.13(a)(3) (indicating a subscriber-based royalty floor for standalone portable subscription services of 50 cents per subscriber per month) and Section 385.13(a)(4) (indicating a subscriber-based royalty floor for bundled subscription services of 25 cents per month for each active user).

5. BENCHMARKING FOR OPPORTUNITY COST

Licenses obtained by interactive streaming services from labels for rights to use sound recordings are not compulsory. Consequently, the royalty rates paid to labels are freely-negotiated market rates. These rates provide a benchmark for estimating what the aggregate average per-play rate might be for musical works in a hypothetical non-compulsory market.

When sophisticated market participants negotiate deals in an unconstrained market they implicitly or explicitly consider the opportunity costs involved with such deals. The relative valuations of the available alternatives influence the terms of negotiations; specifically, labels should be expected to not license interactive streaming services unless the labels will benefit from doing so by at least recovering their opportunity cost. Consequently, sound recording rates – appropriately adjusted for any economic differences expected to result from negotiating licenses for musical works instead of sound recordings – provide benchmarks that bake-in the opportunity cost.

One way to analyze how interactions between rightsholders and interactive music services could be expected to produce market prices through negotiations in the absence of compulsory licensing is to model the bargaining process in a free market. Bargaining is complicated. Any solution to a bargaining game that requires specifying too much structure to the bargaining process (such as who offers first and the sequence in which multiple issues are resolved) will suffer from a lack of generality. This problem is exacerbated when there are more than two parties to a bargain. In this case the structural problem is worse because there is a new dimension of the possibility of subgroups of players forming coalitions against other players. Lloyd Shapley's solution, originally published in 1953, elegantly avoids these problems (see Shapley, 1988). It does so by considering all the ways each party to a bargain would add value by agreeing to the bargain and then assigns to each party their average contribution to the cooperative bargain. It is an axiomatic feature of the fairness constructs of the Shapley

value approach that market participants that make equivalent contributions to the cooperative enterprise earn the same profits.

Bargaining among interactive streaming services and multiple music rightsholders is exactly the type of bargaining problem that Shapley's solution is best suited to address.¹⁸ The approach has also been used to model the pricing of rights in connection with the voluntary licensing of music by broadcast radio stations (Watt, 2010).

In a market in which interactive streaming service businesses depend on obtaining licenses for the use of musical works and sound recordings, the parties could collectively benefit from entering into licensing agreements for the distribution of music. A collaborative process of mutually agreeing to royalty rates that are objectively fair provides a possible efficient solution to the bargaining problem facing participants in a hypothetical market without compulsory licensing. In the economic field of game theory, these types of market problems are referred to as games.

The term Shapley value is given to a solution to a cooperative game of this type and represents the share of the economic value (producer surplus, i.e. profits) from the joint endeavor received by each participant. The approach involves considering all the possible permutations of agreements to participate (coalitions) that could result between the parties and studying how the addition of a particular participant, in each particular sequence, adds to the combined surplus in each case. These additions to the combined surplus represent the contributions made by each party in each permutation of the coalitions between the parties. The Shapley value for a particular party in the game is the average contribution made across all of the possible coalition permutations.

¹⁸“The Shapley value methodology as a solution concept has been widely endorsed and lauded by economists as providing a fair and equitable allocation rule. [...] For example, according to Nobel Laureate Robert Aumann; ‘[B]ecause of its mathematical tractability, the [Shapley] value lends itself to a far greater range of applications than any other cooperative solution concept. And in terms of general theorems and characterizations for wide classes of games and economies, the value has greater range than any other solution concept bar none.’” Watt (2010).

This framework can be used to determine royalty rates that would result from negotiations between rightsholders and interactive music services in a hypothetical non-compulsory market. A prior CRB proceeding discussed Shapley value approach with approval for an analogous inquiry.¹⁹ I apply the Shapley value approach below to assess how royalties for musical works would compare to sound recording royalties if they were to be negotiated freely in a non-compulsory market. The symmetry of the labels' and publishers' rights in the interactive streaming business means that this framework results in symmetric treatment—an even division of profits between labels and publishers.

In the language of game theory, the participants in the endeavor are the players in the coalition game. For a given set of players, there are many possible coalitions that can form where a coalition may consist of all or a subset of the players. The value of a coalition depends on the players from whom it is comprised. While players may vary widely in the value they contribute to the coalition, they can be divided into one of two general categories, veto players and non-veto players. A veto player can be thought of in a binary sense—coalitions to which the veto player is a member may or may not have positive value, whereas coalitions to which the veto player is not a member necessarily have no value. Hence, the label 'veto player' is derived from that player's ability to block a valuable coalition from forming. A valuable coalition must contain all veto players as members.

A Shapley value is the average marginal contribution a player makes to a coalition in terms of producer surplus (i.e. profits) across all possible coalition orderings (e.g., permutations). To illustrate this concept, consider the classic glove game. There are three players, *a*, *b*, and *c*. Players *a* and *b* each have a right glove and player *c* has a left glove. The surplus generated from one pair of gloves is \$1 and the surplus generated from an unpaired glove is \$0. In order

¹⁹The CRB determination in "Distribution of 1998 and 1999 Cable Television Funds" (CRB Docket No. 2008-1, 80 Fed. Reg. 13423, 13429-30, March 13, 2015), concluded that, "the optimal measure or approximation of relative value in a distribution proceeding – the Shapley valuation method – was neither applied nor approximated by either party." Application of the Shapley value approach was developed however, "inspired by a similar example set forth by Professor Richard Watt, Managing Editor of the Review of Economic Research on Copyright Issues and a past president of The Society for Economic Research on Copyright Issues. [citation omitted]."

to create any value, a coalition must form that includes player c and either player a or player b . The players may enter into the coalition in any order, and a player's marginal contribution is determined by the change in coalition value caused by his entering. For example, the marginal contribution of the first player to enter is always zero, as a right glove or a left glove on its own is worthless. Alternatively, if player c is the first to enter and player a is the second to enter, player a 's marginal contribution is \$1—the coalition before he entered included only a left glove and was therefore worthless, whereas the coalition after he entered included a pair of gloves, which increased the coalition's value from zero to \$1. In this example, player a and player b each have a Shapley value of $\$1/6$ and player c has a Shapley value of $\$2/3$. Player c commands a higher share of the surplus because she is the only player to own a left glove, whereas player a and player b are not—they are substitutes for one another.

The interactive streaming industry can be thought of as involving a set of interrelated negotiations; the outcome of which may be approximated by the Shapley value approach. Specifically, there may be a label, a publisher, and two services A and B – hypothetically, Spotify and Rhapsody – who are negotiating over the allocation of value created by a musical work. Importantly, as they each hold a right over the musical work, in a non-compulsory negotiation, both the record company and the publisher must agree to any negotiated deal in order for value to be created. Hence, they are both veto parties with the ability to prevent value creation should they want to withdraw their participation.

Interestingly, one might suppose that in this environment, the streaming services might themselves command limited negotiating power. The usual intuition is that these parties are substitutes in terms of getting value to consumers, and hence, they can be played off against one another to effectively be pushed to receiving payments close to their costs, earning no surplus. However, the Shapley value approach predicts otherwise. For instance, while the record company and publisher can do without Spotify if they have a deal with Rhapsody, the Shapley value approach supposes that without Spotify waiting in the wings (so to speak),

Rhapsody will command greater power. Thus, because they have a role in providing competition against one another, the publisher and record company will not push these streamers to their limits in negotiations. Both companies will earn some surplus although perhaps not as much as the veto parties in this game.

This illustration is, of course, a simplification. One complication is that publishers and record labels may have different cost structures. Costs do not change the Shapley values, which represent the fair share of profits that rightsholders and services should receive from the endeavor, but they affect the amount of royalties that would have to be paid to deliver these profits to publishers and labels. The profits equal to the Shapley values would be delivered to labels by paying royalties equal to the Shapley values plus their incremental costs. The Shapley value is an equitable distribution of surplus, not revenue—costs must be deducted from royalty revenue to yield profits. Any difference in incremental costs associated with cultivating and licensing their respective repertoires would lead to different royalty rates. Since the Shapley values for publishers and labels are equal, differences in costs would lead to less than proportional differences in royalties.²⁰

Ultimately, what we learn from this analysis is that in a hypothetical market where licensing of composition and sound recording rights were equally unconstrained, and royalties were negotiated with the aim of establishing a fair and efficient division of the surplus generated from music delivery via interactive streaming, publishers and labels would have the same ability to capture surplus. Their equal Shapley values would result in negotiated royalty rates that delivered equal profits to each.

²⁰To illustrate this point, consider the royalty rate for sound recordings (R_{sr}) and the royalty rate for compositions (R_c) to each be equal to the sum of two parts, cost recovery (C_{sr} and C_c for sound recordings and compositions respectively) and a portion of total surplus (S_{sr} and S_c for sound recordings and compositions respectively). Then we have $R_{sr} = C_{sr} + S_{sr}$ and $R_c = C_c + S_c$. Note that from the above analysis of Shapley values, we know that $S_{sr} = S_c$. Then if we conjecture that sound recording production costs are greater than composition production costs ($C_{sr} > C_c$), it must be the case that the ratio of sound recording royalties to composition royalties is less than the ratio of sound recording costs to composition costs ($R_{sr}/R_c < C_{sr}/C_c$).

6. CONCLUSION

This paper has outlined how access pricing rules can be used to derive principles that should undermine the determination of mechanical royalty fees. I have discussed this in the context of interactive streaming. Rules such as ECPR argue that copyright holders should earn fees that compensate them for the opportunity cost of making their work available for use on particular distribution avenues (like interactive streaming) and should have a structure that is neutral across business models. Arguably this would be achieved by a fixed dollar per play rate for streamed music. In doing this, downstream services will be able to appropriate the full value of any innovations they bring to the market. In their preliminary determination, the Copyright Royalty Board, however, did not endorse this principle and, instead, opted for a percentage of revenue formulation that permits copyright holders to appropriate some of the innovations from downstream services. Their decision was influenced by the fact that in many negotiations for sound recordings a percentage of revenue structure had been agreed upon by the parties.

In addition, I have argued here that the level of fees for mechanical royalties can be benchmarked using the freely negotiated profit outcomes of labels based on the logic of economic models of bargaining such as the Shapley value. In principle, when two inputs to value are equivalent, they should receive the same share of the surplus generated. By taking the market outcomes from labels for sound recordings, one can use this to back out a mechanical royalty rate that would allow composers to earn an equivalent service. In their preliminary determination, the Copyright Royalty Board has endorsed this type of approach and used it to come up with the proposed level of fees.

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