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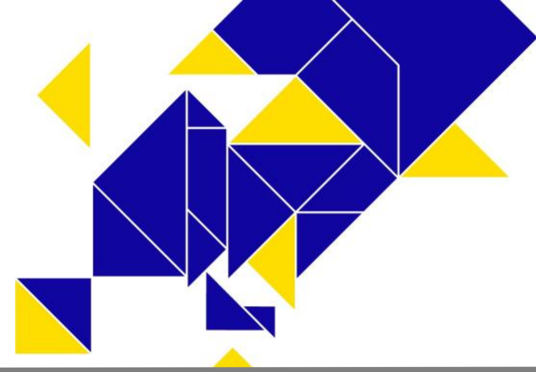

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Figuring it out: applying economics to copyright royalty rates for streamed music

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Figuring it out: applying economics to copyright royalty rates for streamed music*

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'Technology changes: economic laws do not': Shapiro and Varian *Information Rules* (1999)

I. Introduction

Music streaming burst into economists' (and others') consciousness with the Napster case. A few economists had written on copyright in the 1980s (see Handke and Towse, 2007) and a wider interest in the economics of digital production came from Shapiro and Varian's book cited above (albeit with little said on the role of copyright law). Still very much a minority interest, economics of copyright has established itself and produced a small literature applying it in practice to streamed music, the topic of this article.

What does economics have to say about streamed music? If one were asked to advise a media organisation or a copyright management organisation (CMO) representing creators of music on the economics of streaming in a court or similar enquiry, what theories would be appropriate? Streaming represented a major and potentially destructive shift in the technology of the reproduction of music: has economics adapted to changes wrought by the adoption of digital technologies in the creative industries? These are the questions that motivated this paper and some answers are to be found in papers by economists written in connection with two settings of streamed music royalty management: the statutory regulation of copyright and collective management of rights. This article is not a review or evaluation of those texts or of the decisions taken but rather a search for the type of economic concepts used in them viewed through a methodological lens.[1]

The article is basically a review of two specific instances of the use of economics in deciding royalty rates for the use of streamed music: first, the US Copyright Royalty Board (CRB)'s judgement on Phonorecords III, finally published in 2019 (explained below); and second, the ongoing discussion at the time of writing on 'user-centric' versus 'pro rata' method for distribution of streaming royalties by CMOs. Both face up to the pervasive problem of efficiency versus equity objectives, which, though widely acknowledged in economics, is often shuffled off, but not so here. Applying economics to these topics reveals the difficulty of solving actual problems and I report on these topics with the questions posed above in mind. In particular, my interest began with looking into the extent to which 'new' theories embodied in what has come to be called 'platform economics' are being applied in such circumstances and how theory in turn is interpreted when in applied in practice (Towse, 2016).

*I am most grateful to Marcel Boyer, Martin Kretschmer, Richard Watt and to another generous colleague (who prefers to remain anonymous) for their helpful, detailed and encouraging comments and suggestions. All errors of omission and commission are, of course, mine.

[1] To some extent, this follows up on my earlier work exploring economics and digitisation (Towse, 2016). I am not a trained methodologist of economics, rather an apprentice to a master: my late husband Mark Blaug made it his speciality (Blaug, 1980).

Price regulation requires a view of the overall welfare implications for the consumer and producer and for society at large (Tirole, 2016). Consultancy firms and academic economists brought in as consultants are hired by opposing parties in a regulatory hearing process. Research for this article consisted of reading written expert submissions (filings), testimonies and witness statements by a number of economists before the CRB for its process of setting the mechanical rate for interactive streamed music in its Phonorecords III decision (and those related to earlier hearings, Web IV and SDARS III, which laid the basis for it), as well as related literature in the economics of copyright on rate-setting.[2] As all the relevant documents are made public, in redacted form, it is possible to gain access to all sides of what is effectively a contest of economic ideas (see CRB, 2019).

Recent debates on the desirable method for the distribution of royalties from streamed music to creators, however, were at the time of writing ongoing in the music business; though they are not subject to direct regulation, the operations of CMOs around which this debate is taking place are scrutinised by regulators. They raise the question of 'fairness' or equity versus efficiency to which economists have responded. These 'case studies' together formed the basis of research for this article.

II. Institutional background

There are three sets of institutional arrangements that underlie the discussion in the paper: copyright law, regulated rate-setting by a statutory court and administrative procedures of CMOs managing musical copyrights. They are briefly outlined here.[3] Copyright law protects the composers of music and the authors of lyrics as well as performers through rights to control their reproduction and performance. When a song is recorded (a reproduction), the song-writer (composer and lyricist) is due a royalty for the so-called 'mechanical right' (or 'phonorecord right' in the USA); when the song is performed in public (in live or recorded format, for example, played on the radio), the performance right requires compensation for both composer and performer. These rights are mostly administered by CMOs (PROs – Performance Rights Organisations in the USA) which specialise in one or the other type, albeit in somewhat different ways.

The royalty rate for the mechanical right (for historical reasons) is subject to compulsory licensing in many countries: in some jurisdictions it is set by a national board, as in the case of the USA's CRB.[4]

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[2] Web IV (on webcasting) and SARS III (digital transmission of sound recordings and the reproduction of ephemeral recordings by preexisting subscription services and preexisting satellite digital audio radio services). The Phonorecords III hearing took place in 2017 and an interim decision of the rates was published in 2018; the final official version, published in 2019 by the Library of Congress, is the one cited here – CRB (2019). The story is not yet over for Phonorecords III, however, as there is an appeal at the time of writing by the so-called 'services' - Spotify, Amazon, Google and Pandora. See https://completemusicupdate.com/article/spotify-et-al-file-their-appeal-over-the-us-copyright-royalty-boards-song-rate-increase/ also https://completemusicupdate.com/article/eminem-publisher-sues-spotify-declares-music-modernization-act-unconstitutional/.

[3] For details on copyright in music streaming, see Cooke (2018); also 'Going for a Song', a short online video available on www.copyrightuser.org/create/creative-process/going-for-a-song/ . A definitive account of the economic issues is to be found in Gans (2018). That article provides a useful account of the background that underlies the present paper, which investigates the various types of economic thinking behind the recommendations and witness statements. Gans was the expert witness on behalf of the US Music Publishers Association in the Phonograms III enquiry.

[4] Canada has the Copyright Board of Canada (see Boyer, 2018/2019); in the UK the mechanical right it is regulated by the Copyright Tribunal (the current value is 8.5% of the dealer price of a record). See also Wall (2017).

Song-writers and their publishers receive their royalties via an agency or CMO that collects and distributes them, with the split depending upon the publishing contract (Towse, 2017).[5] Unpublished song-writers receive the royalties direct from the managing agency. In the USA the royalties for non-interactive streaming and satellite services are paid to SoundExchange which, by law, must pay 50 per cent of the royalties to the artists (45% to the featured artists and 5% to non-featured artists -the backing musicians and session players).

The performing right, which is not subject to regulation by a court, is administered by the CMO (PRO in the USA) and royalties are split 50:50 between the songwriter and the publisher of a song according to the use made of the work in a wide variety of media and other settings, for each of which there is a different licence fee. Contracted 'named' performers receive their royalties via the record label, as stipulated in the recording contract; backing performers, who are paid per performance a fee, receive their royalties through a dedicated CMO or other agency (Towse, 2014).

Established institutions were able to adapt fairly easily to digital downloading of recorded music since supply is controlled by the record labels so that royalties for downloads could be treated in the same way as for hard copy sales. Digitally streamed music turned out to be very different, however, as on the one hand it could be very easily and costlessly shared without payment, and on the other, it was offered by digital service providers (DSPs), platforms acting as intermediaries between the consumer and the record label and the song-writers and performers. That broke the link between the payments between the consumers and the producers of music, as discussed below in relation to the pro rata versus user-centric debate of distribution of streaming royalties, showing that the distribution model alters signalling of price and of artistic preferences between the consumer and the song-writer and performer. On the supply side of streamed music, however, copyright law's provisions for payment for the use of mechanical and performing rights still apply, though there has been some confusion over institutional arrangements for collecting and distributing royalties.

The parties involved in music streaming are: the DSPs – Spotify, Apple Music, Amazon et al - which distribute recorded music to customers though subscriptions or 'for free' financed by advertisements and the users' data; the record labels which hold the rights to recorded music; music publishers which hold the rights to the underlying song or musical composition; the performers who have rights in their performances; and the song-writers, who have authors' rights in their work. Some of these rights are transferred 'downstream', for example, the song-writer often contracts the reproduction and distribution rights to the music publisher, who in turn contracts with the record company for the right to record and distribute the song. The performing right remains with the song-writer and the publisher, who, however, typically assigns it to the CMO or PRO) that administer the royalties from live and secondary performances (which are legion). Featured performers (who may also be the song-writers) have contracts with the record label, usually signing their performance rights in exchange for a royalty, while backing performers are paid a buy-out fee for their work.[6] Consumers of streamed music pay a monthly subscription (which has remained the same for the last few years, losing value to inflation, see Towse, 2020) for access to a huge catalogue of musical works to the DSP, in some cases with a right to download and retain titles, or they put up with advertisements and the use of their data

[5] The Harry Fox agency in the USA and the Mechanical Licensing Collection Society (MCPS) in the UK, now part of PRS for Music) distribute mechanical royalty revenues; the mechanical right is not assigned in the UK and the MCPS acts as an agent. A new CMO, the Mechanical Licensing Collective, has been established in the US under the Music Modernization Act, starting from 2021: see /www.themlc.com.

[6] 50 years after the record is released, sessions players can claim a share of the value of the use of the recording in the EU.

and get the music for free. Advertisers pay the DSP for access to the service and both sources of revenue are distributed eventually to the performers and song writers as royalties and equitable remuneration payments.

These complex combinations of users and rights holders form the stage on which copyright plays its role. In this mix the question arises as to what is a fair and efficient return to all concerned from the pot of money generated by music streaming. In addition to these individuals and enterprises – the 'private' interests – there is also a social welfare (public interest) aspect in promoting economic and cultural diversity and creativity, introducing another dimension to the topic.

III. Economics of digital production

The economic response to the development of digital production and distribution has shifted the focus of analysis from the static theory of the firm, with its assumption of eventually decreasing returns to scale and consequent increasing costs, to platform economics, which recognises ever-increasing returns to scale and the dynamic interaction of supply and demand with the ensuing more complex pricing issues (Belleflamme and Peitz, 2019a). Nevertheless, the long-established theory of natural monopoly, which takes increasing returns to scale into account and is used in the regulation of utilities and the CMOs, also plays a role in regulatory proceedings as well as in the economics of digital production.

Unlike non-digital enterprises, for which there is a linear upstream downstream process, however, platforms benefit from direct and indirect network effects which have dynamic loopbacks. Platform economics, which has developed to analyse digital supply, offers the appropriate analysis for music streaming by DSPs (Towse, 2020). DSPs, which may specialise in music (Spotify) or supply music as part of a wider offer of products (Apple Music, Amazon), are two- or multi-sided platforms. They harvest valuable data from consumers which enables them to price discriminate in their supply and sell data on to specialised users. These features distinguish platforms from other types of economic enterprises and require analysis that takes them into account.

Platform economics and natural monopolies

One of the most striking economic features of the digital economy is the switch to increasing returns to scale with its implications for firm size (Haskel and Westlake, 2018). The basic feature of a natural monopoly is that average costs of production fall as output increases and so marginal cost is lower than average cost; consequently, competing (profit-maximising) producers in the market would cause price to be higher than that set by a single supplier. Regulators therefore assent to monopoly in such markets, subject to their controlling prices in order to prevent exploitation of consumers: in principle, a two-part tariff is adopted with the price set according to the marginal cost and a 'standing' charge is mandated to cover fixed costs (such as a connection charge or subscription).[7] In the context of the

[7] This could take the form of an upfront payment plus a rate per use in music streaming; direct agreements include other payments, such as minimum guaranteed total payments over the course of the agreement. See Rubinfeld (2016-19) 32 and 50 in the Web IV hearings, see www.federalregister.gov/documents/2016/05/02/2016-09707/determination-of-royalty-rates-and-terms-for-ephemeral-recording-and-webcasting-digital-performance. However, this was not proposed by any party in the Phonorecords III hearings (and so could not be considered in the CRB proceedings).

music industry, the CMOs are natural monopolies: as membership, non-profit cooperatives, their fixed costs are financed by a charge to members that is deducted from gross revenue.[8]

Platforms share the feature of low (even zero) marginal costs: one master copy in digital form can supply an infinite number of users, the information good feature emphasised in Boyer and Faye (2018). However, copyright law requires that usage be compensated. DSPs deal with that by acquiring rights to distribute streamed music (as outlined above), charging advertisers for financing free usage and charging a subscription fee to consumers for access to the catalogue for which the DSP has obtained distribution rights from the record labels. A brake on what could be a natural monopoly of music streaming is the practice adopted by record labels of not giving the DSPs exclusive rights, instead offering them non-exclusive licences to their catalogue – the complementary oligopoly: the oligopolistic major labels' repertoire is complementary since consumers and other users, such as broadcasters, want access to the whole musical repertoire. Moreover, as switching costs for consumers are low, they 'multi-home' by using several platforms, thus also promoting competition on the demand side (Belleflamme and Peitz, 2019b).

Platform economics deals with the pricing and incentives of digital intermediaries, utilizing the theory of two-and multi-sided markets, network effects, product bundling and other such features of the information economy, inspired by the work dating from the 1980s of Laffont and Tirole that applied principal-agent analysis to regulation of utilities (Tirole, 2016). DSPs are identified as two- or multi-sided markets charging differential prices for the service. The theory applies to a wide range of cultural products (Bacache-Beauvallet and Bourreau, 2020). It is clearly applicable to streamed music Towse, 2020).

IV. CRB and the phonorecord rates

With the advent of streaming, royalties for the mechanical right must be paid by DSPs, as outlined above. It is a compulsory right in the USA (as elsewhere), subject to regulation by the CRB which sets the tariff and terms for licensing the copyrights in musical works of songwriters and publishers 'made and distributed as physical phonorecords, digital downloads, and on-demand digital streams' (CRB, 2019).

The Board is presided over by three judges, one of whom, Judge Strickler, specialises in economics. In the recent round of rate-setting for music streaming, Strickler dissented from the majority decision, giving rise to a detailed discussion of the appropriate economic analysis to apply in setting the rates. Rates are set for a five year period – the present one being for 2018–2022. The Board calls for both written and oral testimonies on behalf of interested parties, which are published. The procedure for this round, known as Phonorecords III, began in 2016 with hearings in 2017 and the rate was announced in February 2019.[9] The interim period was taken up with filings on behalf of interested

[8] Some authors argue that CMOs are themselves platforms (Page and Safir, 2018).

[9] Determination of Royalty Rates and Terms for Making and Distributing Phonorecords (Phonorecords III) www.federalregister.gov/agencies/copyright-royalty-board https://www.federalregister.gov/agencies/copyright-royalty-board. A Rule by the Copyright Royalty Board on 02/05/2019.

parties and their consideration and hearings by the judges. All documents (in redacted form) are available online, including Strickler's dissent document.[10,11]

Streaming services pay royalties to three parties for the use of both mechanical and performing rights: to record labels for the performance of their sound recordings; to the Performing Rights Organisations (PROs or CMO representing publishers and performers - ASCAP in the USA) for public performances of their works (live or broadcast); and to music publishers (via the Harry Fox Agency in the USA) for the mechanical right. While the mechanical rate has long been a feature of US copyright law, it was only with the Digital Millennium Copyright Act (DMCA) that sound recording artists and record companies acquired sound recording performance rights for interactive uses of digital works (which are not regulated by the CRB). However, as interactive streaming services pay royalties for both, often as a single payment, discussion of the relationship between the rates for both rights inevitably came into the assessment of the mechanical royalty rate by the CRB. The previous settlement (Phonograms II) had been for an 'all-in' rate and in order to calculate the mechanical rate, the amount paid by the DSPs to the PROs for the performance right was subtracted from the base rate. By 2014, 52 per cent of music publisher revenues came from performance royalties and 23 per cent came from mechanicals in the USA: songwriters typically receive 75 per cent or more of mechanical royalty income, while performance royalty income is split 50/50 with publishers. The statutory compulsory licence rate set by CRB is that at which the copyright owner must offer a licence to any use in the category covered by the terms of the decision, in this case interactive streamed music.

The CRB hearings offer an unparalleled opportunity to see economic advice in action at the highest level, since many of the consultants hired by the various parties are leading academic economists. For example, 'Written Direct Statements' and 'Written Rebuttal Statements' include testimonies from Carl Shapiro for Pandora in 'Web IV' and for Sirius XM In 'SDARS-III'), Michael Katz for the National Association of Broadcasters in 'Web IV' and for Pandora Radio in Phonorecords III), Daniel McFadden (for SoundExchange in 'Web IV'), Robert Willig (for SoundExchange in 'SDARS-III'), and Richard Watt for Copyright Owners/National Music Publishers Association in 'Phonorecords III. The challenge for the experts, however, is that a specific numerical value or set of rates has to come out of the process. Needless to say, that is haggled over, with the CRB having the final decision on the tariff. The Phonorecords III decision for the period 2018-2022 established an all-in rate and rate structure for performances and mechanical reproductions, equal to the greater of the percent of total service revenue and Total Content Cost (TCC). It was this decision that Judge Strickler challenged in his Dissent (CRB, 2019: printed version p.1963 et seq.).

I was interested in how platform economics would be applied by the CRB to rates for the use of streamed music as that theory so clearly relates to the type of enterprises involved. It seems, however, that the theory was not discussed in the hearings as it was not brought to the table by the participants (and the CRB must decide according to the evidence submitted). Indeed, the economists involved mostly confined themselves to familiar microeconomic concepts - opportunity cost, equilibrium price, elasticity of demand, price discrimination, willingness to pay, revealed preference, consumer and

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[10] Several of the contributors to the CRB proceedings have published their views in the *Review of Economic Research on Copyright Issues* (RERCI): see Strickler (2015), Watt (2010) and Gans (2018). RERCI also has articles on other jurisdictions; for example, see Boyer (2004, 2018/19) and Wall (2017) on Canada.

[11] Several of the DSPs are set to challenge the rates set by the CRB; see https://completemusicupdate.com/article/spotify-et-al-file-their-appeal-over-the-us-copyright-royalty-boards-song-rate-increase/.

producer surplus, deadweight loss, complements and substitutes, derived demand and public goods (pure and impure) - that are routinely used in regulation of utilities (as noted by Strickler, 2013:p.4 ‘the experts often place their testimony in the context of other microeconomic areas - such as industrial organization, law and economics and price theory’). However, the production process in most regulated industries typically involves the use of hardware, often with very high fixed costs, and revenue is from sales, whereas the distribution of digital music does neither. Music streaming services are information goods with zero marginal costs, in effect public goods, for which the price is set according to willingness to pay (Boyer, 2018/19). Moreover, those theories are largely static and are inadequate for dealing with the dynamic nature of the digital platforms outlined above. On the other hand, the dynamic aspects of complementary oligopoly features featured quite prominently in the deliberations on price discrimination of the CRB and in Strickler’s Dissent.

That said, two less familiar concepts appeared in the hearings and in a some of the written documentation presented as evidence. They are the ECPR (Essential Component Pricing Rule) and the Shapley Value. The Shapley Value is concerned with the efficient and equitable distribution of a pot of revenue to which several inputs have contributed sequentially. The ECPR is concerned with efficient pricing of inputs in a joint output. Both are discussed in detail below. First, though, the guidelines that ruled the scope of the CRB’s enquiry are outlined, which, to an extent, could influence the choice of applicable economic analysis.

Official guidelines for CRB: the objectives for regulators

The CRB is expected to set the mechanical rate conforming to a set of well-established policy objectives laid down in the Digital Performance Right in Sound Recording Act of 1995[12]:

i) Factor A: ‘Maximizing the Availability of Creative Works to the Public’
ii) Factors B and C: ‘Fair Income and Returns and Consideration of the Parties’ Relative Roles.’ Factor B directs the Judges to set rates that ‘afford the copyright owner a fair return for his or her creative work and the copyright user a fair income under existing economic conditions.’ Factor C instructs the Judges to weigh ‘the relative roles of the copyright owner and copyright user in the product made available to the public, across several dimensions.’
iii) Factor D, directs the Judges ‘to minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.’ (CRB, 2019: FR84 1956; printed page 1956).

Both efficiency and equity objectives are stipulated. Factors A and D are efficiency objectives and are dealt with relatively straightforwardly in the final report; Factors B and C attracted considerable conflict between the various parties and their expert advisers and formed the basis of the Dissent by Judge Strickler. The efficiency discussion centred on hypothetical deals in a market between a ‘willing buyer and seller’, which for some also satisfied the equity objective. Indeed, many economists would argue that ‘workable competition’ in a market solves both issues – the willing buyer and the willing seller negotiate terms that each accepts (for example, Boyer, 2018/19; also Strickler, 2013).The equity discussion by the CRB centred on the Shapley value. The distinction

[12] These have now been superseded by the Music Modernisation Act of 2019, reiterating the ‘willing buyer-willing-seller’ marketplace standard: see Victor (2020).

between equity and efficiency is made here partly for presentation purposes but also because of the 'fair income' stipulation in B above; however, the Shapley rule relates to both aspects of a deal.

Willing buyer-willing seller criterion

The willing buyer and seller criterion requires the rate to be set 'as if' it were the equilibrium market rate in a market in which there is effective competition, say between several oligopolists. While some strongly pro-market economists appear to think that is feasible, others point to the distortion of the market by the presence of the compulsory licence and the long history of its regulation, therefore mandating a second-best solution. This represents a significant theoretical divide not just of theory or methodology but also of attitude: the stance taken represents more than just applicable economics, an issue referred to by Strickler (2015: 8) in the context of non-complementary oligopoly structure of the sound recording industry. There is, however, a market-based option in that freely negotiated rates between parties can be (and often are) endorsed by the CRB. Moreover, market forces could provide an ex post test of the regulated rate: if it be set too high – that is, exceeding 'market rate' - the parties have an incentive to negotiate their own deal: if no renegotiation takes place, it may be assumed that the regulated rate is either the 'equilibrium' one or is below it.

Two ways of applying the willing buyer willing seller rule and reaching a recommendation were discussed in by the CRB in Phonorecords III: benchmarking and bargaining room theory. The use of a benchmark, such as the 2012 rates in the Phonorecords II decision, which could be adapted to new trends, might not be 'optimal' in the second best sense but had the merit of reducing disruption. The bargaining room approach enables different pairings of licensors and licensees (music publishers, record labels and interactive streaming services) to negotiate agreements at varying rates below the statutory rate; however, this would raise transaction costs if the parties were required to negotiate separately each other, the process would diminish the transaction cost savings. Transaction cost reduction is seen as an important reason for statutory licensing (and the bargaining room approach was rejected by Strickler in his Dissent on those grounds (but see Victor, 2020).[13]

Efficient component pricing rule (ECPR)

As noted earlier, efficiency in the market for streamed music requires that each streaming service is able to offer users roughly the same repertoire, therefore it requires licences from all record labels and music publishers holding copyright works – the essential components. The literature on (and practice of) regulation of utilities has long adopted the efficient component pricing rule (ECPR) or parity-pricing formula and has been advocated by Baumol and many others as the basis for setting licence fees for patents and in other regulatory settings; it applies also to copyright works used in the production of cultural goods. As explained by Baumol: 'The efficiency property of the parity-pricing rule is the attribute that, when charged the parity licence fee, a renter of the copyrighted material will be able, viably, to charge consumers a lower price than the copyright owner's only if the former is the more efficient of the two in the process of transmitting the item to consumers' (Baumol, 2020:15-17;

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[13] The UK's Copyright Tribunal similarly appears to adopt the benchmark approach – see CT 127/14 (order) ITV Network Ltd (ITV) v Performing Right Society (PRS) and Mechanical Copyright Protection Society Ltd (MCPS); issued on 28 July 2016 available on https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/546242/ct12714-order.pdf.

see also Baumol, 2004). Accordingly, a royalty rate set such that there is a 'level playing field' between the copyright owner and the distributor of the final product embodying the copyright work would lead to the product being supplied at a lower price, thus improving welfare. Strickler (2015) and Gans (2018) both advocate adopting ECPR, with Strickler also referring to the M-ECPR (Market-determined Efficient Component Pricing Rule[14]) aimed at reducing the opportunity cost of eliminating the rents of complementary oligopolies.

The Shapley rule

The Shapley rule, developed by Lloyd Shapley in 1953, had been long been applied in regulatory hearings, including eventually to copyright rate-setting, and it featured in the CRB submissions of several expert witnesses and in the Judges' final decision, both in the context of efficiency of rate-setting and of equity ('fairness') and its correct interpretation was discussed at some length in the final report. Adopting the approach of game theory, it models bargaining processes in a free market by considering all the ways in which each party to a bargain would add value by agreeing to the bargain and then allocates to them their average contribution to the cooperative outcome as their share of profits. Thus the rule may be used to determine the royalty rate that would result from negotiations between rights holders and DSPs in a hypothetical free market, thereby offering a framework to the regulator for setting the rate. From the efficiency point of view, it prevents hold-ups; as a solution to the equity objective (Factor B above), it provides assurances that the rate set would be 'fair' to all parties.

In the market for streamed music, contracting proceeds sequentially so that not all the parties involved are able to reach an agreement with each other on the distribution of the final revenue from streaming at the time of making the initial contract. The 'upstream' song-writer bargains with the music publisher, who bargains further downstream with the record label, which bargains with the DSP which then supplies the consumer. The song-writer, publisher and labels provide an 'essential input' for the DSP. The Shapley value for any one of them is the average contribution made across all of the possible permutations of agreements between them.

In the end, the CRB set either per-play rates or percent-of-revenue rates in Phonorecords III with different rates within each structure to promote price discrimination as a means of matching cost to with WTP and to reflect 'workable competition'. As a final observation on the CRB proceedings, what we see, as for any other regulator, is that although there were clearly established objectives for the deliberations of the Board (now changed by the MMA as mentioned above), combined with the exposition of well-developed economic theories, when it comes to applying them to the practical matter of what the mechanical rate for the relatively new technology of music streaming *should* be, economic experts fell back on familiar concepts in industrial economics that worked when applied to pre-digital technology but could be stretched, at a pinch, to interactive music streaming platforms.

V. Pro rata vs user-centric rule for distribution of royalties for streamed music

The second context for considering the practical application of economics is the rule by which royalty revenues are distributed by CMOs. Collective management of copyright is a long established feature of the music industry that deals with both the negotiation of rates for the use of music and the

[14] See Economides (1997, posted 2010) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1548808.

distribution the collected royalties and other payments (such as equitable remuneration) to copyright owners (Handke and Towse, 2007). Once the rate is set, however, there is a further matter of efficiency and equity relating to the model adopted for distributing royalties to the parties involved and accordingly the distribution rules of the CMOs are pertinent. That is the context for the pro rata versus user-centric debate. For music streaming there are individual agreements between the record labels and the DSPs - a willing buyer and seller situation - in which, however, the song-writers, performers and music publishers, the ‘essential components’, are unable to take part, though the outcome is vital to their economic wellbeing. The focus here is mostly on the performing rights of songwriters and performers; it is worth noting in passing that in general, royalties from performing rights by far exceed those of the mechanical right.[15]

This section relates to the debate over how revenues from performing rights of streamed music should be distributed equitably to songwriters and performers.[16] The pro rata system in use by most CMOs distributes the monthly total of subscription revenues in accordance with the number of times a title has been played, essentially the same model as used for radio play. By contrast the user-centric model would distribute the money directly to the artist according to the choices made by subscribers, such as what to play and how often to play a particular title, enabling fans to directly reward their chosen artists - in effect a direct rather than a derived demand model. As with the debates in the CRB, both efficiency and equity issues are involved and have been confused in the somewhat emotional debate. Two sets of contributions have helped clarify the issues: some empirical work has been done as well as economic analysis, notably, that by Page and Safir.

Maasø (2014) seems to have been one of the first empirical studies. Based on actual listening patterns of all users in Norway of WiMP (a subscription music streaming service available on various media) between August 2013 and August 2012, he found that there was no significant difference between pro rata or user-centric payments overall but when disaggregated, the data showed that a user-centric model would slightly reduce payment to the artists at the end of the long tail, though it somewhat favoured Norwegian artists. A similar analysis was done by Pederson in Denmark.[17] The report by Muikku (2017) for Digital Media Finland analysed anonymous user data provided by Spotify for their premium subscribers based in Finland during March 2016 and March 2017. The study analyzed over 8 million streams across 10,000 tracks and 4,493 artists (with the results later verified by a sample five times the size). It found that with the pro rata system, songs recorded by the top 0.4 percent of artists (in terms of overall popularity), got 9.9 percent of the money; however, when hypothetically applying the ‘user-centric’ model, the top 0.4 percent of artists would have received just 5.6 percent of the total.

By contrast to studies based on Spotify data, Deezer (the French streaming service that offers both subscription and ad-based services) introduced a user-centric payment system in 2019, claiming as advantages of switching that it:

- Offers a fairer system for a wide range of diverse local and international artists and genres

[15] There seems to be very little written on mechanical rate distributions by the relevant agencies. In Europe: 76% for the performing right, 13% for mechanicals; in N. America: 86% performing and 13% mechanical (CISAC, 2019).

[16] For an early treatment of this topic, see Snow and Watt (2005).

[17] https://musically.com/2015/08/18/user-centric-streaming-payouts-artists/

- Corrects distortions like age or listening habits (for example, young users also tend to skip more, resulting in further distortion).
- Helps tackle streaming fraud and bot activities.[18]

The Deezer experiment could lead to some clearer evidence of the effect of the shift. As noted before, the equity arguments predominate over efficiency ones.

Matters are not so quite so clear-cut, however, as argued in a report by Music:)Ally contributing to a panel discussion at 'The Great Escape' conference in Brighton (UK) in 2019. It stated that Apple had modelled how changing to a user-centric system of royalty payments would impact on artists and labels and it had found that some genres, for instance, jazz benefited, while others did not, since 'in fact Taylor Swift is subsidising everybody else. An awful lot of people are playing Taylor Swift, but her music [royalties] are shared out among everybody.'[19] That is not surprising since that is indeed how the blanket licence pro rata model deals with pay-outs by CMOs. It is a zero sum game – what some win others lose – unless (as is claimed by some) the user-centric model would shift consumer demand towards people's favoured artists with the knowledge that they would earn more.

The Page/Safir studies

Two monographs by Page and Safir (2018, 2019), both authors with a background of working for CMOs and Page having worked for Spotify as Chief Economist, contribute to the ongoing debate on the pro-rata vs the user-centric model, arguing that economic efficiency aspects have been ignored. As they rightly point out: trade-offs between equity and efficiency are 'integral to and unavoidable in the allocation and distribution of licence revenue. A CMO may choose to distribute more revenue less equitably or less revenue more equitably' (2018: 25). More specifically, they argue that in fact CMOs effectively operate a joint model. PRS for Music in the UK, for example, adopts differential tariffs and distribution rules for the performing right for the same title used in different ways, for example, for live or broadcast music, for which the tariff strongly favours the former. These rules and choices are set within the CMO by its members, albeit under the overall guidance of CISAC,[20] and represent the CMOs' attempt to balance efficiency and equity issues within the collecting society. Within each 'sector', however, pragmatic rules of thumb are made in the absence of any evidence of guiding principle: Page and Safir cite as an example the division of 80 per cent to music in TV programs and 20 per cent to music in TV commercials, part of what they call a 'qualified pro rata system' – reminiscent of the types of decision made in the CRB decisions mentioned above and those of other regulators.

One of the main contributions on the economics of collective rights management by Page and Safir to this debate is to point out that transaction costs of CMOs, which seem to have been ignored in the above-mentioned empirical studies, are greater for some uses than in others. Indeed, the issue of administrative charges dominated debates on the management practices of CMOs in the pre-digital era. In Towse (2013), I pointed out CMOs would have to make enormous investments in digital data management for transactional and individual licensing; some have combined to do so, while others in the EU must make deals with ones that have the facility. Even so, it is widely acknowledged that

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[18] www.deezer.com/ucps; https://support.deezer.com/hc/en-gb/articles/360002471277-User-Centric-Payment-System-UCPS-

[19] Music Ally https://musically.com/2019/05/09/user-centric-streaming-payouts-apple centric.

[20] The International Confederation of Societies of Authors and Composers, the international body of CMOs.

without reliable data on recorded work titles and artists' contribution to them along with some sort of global repertoire database, such as that promoted by CISAC (though it failed), digital rights data management will not work. But without that investment in data systems individual user-centric administration would likely wipe out any benefits to individual artists, as Page and Safir point out. In that context it is worth noting that PRS for Music alone processed over 18.8 trillion digital music performances in 2019, up from11.2 trillion the year before, a massive growth in data volume.[21]

Page and Safir contribute to the debate on pro rata versus user-centric distribution, using the prisoners' dilemma to illustrate the moral hazard implications: what would result if one rights-holder or CMO were to insist on a user-centric based distribution while others retain the pro rata model? They argue that 'key players are forced to trade off one party's equity for another's efficiency'. A further aspect to the 'game' is that neither DSPs nor rights holders are likely to know how much others have been paid leading them to conclude that 'redistribution via user-centric is invariably hamstrung by these unavoidable trade-offs' (Page and Safir (2018:26), especially, I would add, when platform economics is taken into account (Towse, 2020).

V. Conclusion

To economists setting tariffs for the use of copyright is just another type of regulation. Economics of copyright dates back to the 1980s but it has taken a while for economists to get involved in the practicalities of rate-setting by CMOs and by rate courts, such as the CRB. On the other hand, it also took some time for legal practitioners to understand the role economists can play in those processes. Copyright law is even more complex in the digital world, especially in relation to music, and it is confusing to many participants in the industry, especially to the artists it is supposed to benefit. Streaming has taken hold of the music business and with it conflicts and problems over how to apply copyright fairly and efficiently for all. Revenues from streaming in Europe now constitute just over half of all music royalties collected worldwide by CMOs, compared to 25 per cent in the USA and Canada (CISAC, 2019: 14).

Application of methodology – 'how economists explain' – was used to identify which theories economists selected and the underlying criteria for adopting them when advising industry participants on rates for the use of copyright works. Are the economic concepts that are utilised the most appropriate and who is to say? In a court-based decision process, such as in the USA's CRB, it is the judges who have to decide and to set the most appropriate rate while applying the criteria laid down by law. For the performing right, it is the CMOs that implicitly trade-off equity and efficiency in their boardrooms; it is an internal decision, albeit one that has to conform to the wider international system of collective licensing.

Economists, however, judge each other's work in the 'court' of academic publication, supposedly how theoretical progress takes place. Reading the submissions of evidence (filings and testimonies) and the CRB reports themselves shows that that very different approaches were taken by economists to the question of the efficient and fair distribution of digital royalties. The article shows that pre-digital economics predominated in Phonorecords III and in earlier related hearings. In a similar vein, the debate over how royalty revenues from streamed music should be distributed by CMOs has also shown to be amenable to older economic theories. Neoclassical and transaction cost economics

[21] www.prsformusic.com/about-us/track-record/big-numbers

sufficed in these cases. So much for theoretical progress - here, with the innovation of platform economics!

The article is a very preliminary stab at identifying the economic analysis used in these regulatory settings. It shows that there is a tendency to stick to the familiar and tried-and-tested formulas by all the parties involved and to take an incremental approach. It is subject to several (probably many) flaws: one, for reasons of space, I do not present the economic arguments in any detail; I often cite articles from the academic literature by the proponents, as they are necessarily shorter and more concise than the detailed discussion of the CRB's hearings reported in the Federal Register. I mostly ignore discussion about previous settlements and about the CRB's rate-setting procedures past and present as well as the empirical evidence supplied by the various parties. In so doing, the article veers away sharply from the law and economics approach as witnessed in law journals (with their apparently unrestricted word counts): instead it may be characterised as the economics of regulation in relation to copyright law. I hope that this paper suggests (in a preliminary way) a new methodology for analysing the way economics is applied in practice to the operations of a court or tribunal, bearing in mind that methodology is not just about methods but serves a wider purpose of justifying the theory adopted.

So were Shapiro and Varian correct that economic laws do not change? One has to say it seems so in this context. Perhaps court settings encourage conservative choices; it is notable that much of the literature cited is from the previous century. It could be that it is in the nature of submissions to a court that similar (or even the same) economists are selected by the parties to make their case; what succeeded one time may do so again and older and more experienced protagonists are preferred. A lingering doubt persists that neoclassical static theory of the firm with its assumption of eventual scarcity does not best serve the digital world of plenty, even if price discriminatory rates are adopted to address dynamic effects.

That doubt is compounded by the apparent absence of analysis of the joint output by DSPs of commercially-saleable data along with the product (such as streamed music); one of the main tenets of platform economics is the interaction of the different sides of the market whether two-sided, as in the case of specialised music streaming services (Spotify), or multi-sided platforms (such as Apple). Much of the literature on platforms originates in Europe: is it possible that US and European economics of regulation is moving apart? That would be interesting to methodologists as well as having implications for economics of copyright. Future research might contrast the approaches in economic expert opinion in regulatory settings relating to copyright in various jurisdictions.

References

Bacache-Beauvallet, M. and Bourreau, M. (2020).'Platforms' in Towse, R. and T. Navarette Hernández *Handbook of Cultural Economics*, 3rd edition. Cheltenham, UK and Northampton, MA, USA: 421-29.

Baumol, W. (2004) 'The Socially Desirable Size of Copyright Fees' *Review of Economic Research on Copyright Issues*, 1:83-92.

Baumol, W. (2020) 'Applied Welfare Economics' in Towse, R. and T. Navarrete Hernandez (2020) Handbook of cultural Economics, 3rd edition. Cheltenham, UK and Northampton, MA, USA: 9-18.

Belleflamme, P and Peitz, M. (2019a) 'The competitive impacts of exclusivity and price transparency in markets with digital platforms', https://paulbelleflamme.files.wordpress.com/2019/11/coredp2019_19web.pdf

Belleflamme, P. and Peitz. (2019b), Platform competition: Who benefits from multihoming?, *International Journal of Industrial Organization*, 64, issue C, p. 1-26, https://EconPapers.repec.org/RePEc:eee:indorg:v:64:y:2019:i:c:p:1-26.

Blaug, M. (1980) *Methodology of Economics*, Cambridge; Cambridge University Press.

Boyer, M. (2018) *The Three-Legged Stool of Value of Copyrighted Music: Hertzian Radio, SiriusXM, and Spotify*, Working Paper Version – v2), 2018s-32, Montreal; Cirano 2018s-32. Also published in Ysolde Gendreau (ed.) (2019) *Le Droit d'Auteur en Action : Perspectives Internationales sur les Recours / Copyright in Action: International Perspectives on Remedies / El Derecho de Autor en Acción: Perspectivas Internationales sobre los Medios de Protección,* Proceedings of the 2018 World Congress of ALAI (Alliance littéraire et artistique internationale), Éditions Thémis, Montréal:13-40.

Boyer, M. and Faye, A.C. (2018) *Music Royalty Rates for Different Business Models: Lindahl Pricing and Nash Bargaining*. In: Marciano, A. and Ramello, G .(eds.) *Encyclopedia of Law and Economics*, New York; Springer. Also on www.serci.org/congress_documents/2018/Boyer.pdf.

CISAC (2019) *Annual Report*. www.cisac.org/CISAC-University/Library/Global-Collections-Reports/Global-Collections-Report-2019

Cooke, C. (2018) *Dissecting the Digital Dollar*, London , Music Managers' Forum. Available on https://themmf.net/site/wp-content/uploads/2015/09/digitaldollar_fullreport.pdf.

Copyright Royalty Board (CRB), Library of Congress (2019) 'Determination of Royalty Rates and Terms for Making and Distributing Phonorecords (Phonorecords III) A Rule by the Copyright Royalty Board on 02/05/2019'. www.federalregister.gov/documents/2019/02/05/2019-00249/determination-of-royalty-rates-and-terms-for-making-and-distributing-phonorecords-phonorecords-iii. Also Federal Register/ Vol. 84, No. 24 / Tuesday, February 5, 2019 / Rules and Regulations.

Gans, J. (2018) 'Getting pricing right on digital music copyright', *Review of Economic Research on Copyright Issues*, 15(2): 1-22.

Haskel. J. and Westlake, S. (2018) *Capitalism Without Capital*, Princeton, Princeton University Press.

Handke, C. and Towse, R. (2007) 'Economics of Copyright Collecting Societies', *International Review of Intellectual Property and Competition Law*, 8/2007 (38): 937-57.

Maasø, A. (2014) *User-centric settlement for music streaming*, Clouds and /Concerts, University of Oslo. www.hf.uio.no/imv/forskning/prosjekter/skyogscene/publikasjoner/usercentric-cloudsandconcerts-report.pdf

Muikku, J. (2017) *Pro Rata andUser Centric Distribution Models: A Comparative Study*, Digital Media Finland. www.digitalmedia.fi/wp-content/uploads/2018/02/UC_report_final_171213.pdf

Page, W. and Safir, D. (2018) 'Money in, Money Out. Lessons from CMOs from allocating and distributing licensing revenues', *Music and Copyright Newsletter*, 29th August.

Page, W. and Safir, D. (2019) 'User-centric Revisited: the unintended Consequences of Royalty Distribution' available on www.serci.org/congress_documents/2019/user_centric_revisited.pdf

Rubinfeld, D. (2016-19) Witness for Sound Exchange Inc. in Determination of royalty rates and terms for ephemeral recording and digital performance of sound recordings (WEB IV); www.crb.gov/rate/14-CRB-0001

Shapiro, C. and H. Varian (1999) *Information Rules*, Harvard Business School Press, Boston.

Snow, A. and R. Watt (2005) 'Risk Sharing and the Distribution of Copyright Collective Income', in L. Takeyama, W. Gordon and R. Towse (Eds.), *Developments in the Economics of Copyright: Research and Analysis*, Edward Elgar Publishing Ltd: 23-36.

Strickler, D. (2015), 'Royalty rate setting for sound recordings by the United States Copyright Royalty Board: the judicial need for independent scholarly economic analysis,' *Review of Economic Research on Copyright Issues*, 12 (1/2): 1-15.

Tirole, J. (2016) *Economics for the Common Good*, Princeton and Oxford, Princeton University Press.

Towse, R. (2013) 'The Economic Effects of Digitization on the Administration of Musical Copyrights', *Review of Economic Research on Copyright Issues*, vol. 10(2): 55-67.

Towse, R. (2014) 'Economics of Performers' Rights' in R.Watt (ed) *Handbook of Economics of Copyright A guide for teachers and students*, Edward Elgar Publishing, Cheltenham, UK and Northampton, MA, USA: 129-140.

Towse, R (2016) *A Future for the Creative Economy* http://www.create.ac.uk/blog/2016/11/24/a-future-for-the-creative-economy/

Towse, R. (2017) 'Economics of music publishing: copyright and the market', *Journal of Cultural Economics*, 41(44): 403-20.

Towse, R. (2020) 'Dealing with Digital: Economic Organisation of Streamed Music', *Media, Culture and Society*, https://doi.org/10.1177/0163443720919376 (doi: 10.1177/0163443720919376)

Victor, J. (2020) 'Reconceptualizing Compulsory Copyright Licenses', *Stanford Law Review*, 72, April.

Wall, G. (2017) 'Remarks to the SERCI Panel on Regulatory Copyright Tariff Setting Review of Economic Research on Copyright Issues, 2017, vol. 14(1/2): 45-54.

Watt, R. (2010) 'Fair Copyright Remuneration: The Case of Music Radio', *Review of Economic Research on Copyright Issues*, 7 (2): 21-37.