



Copyright: A Digital Gordian Knot

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Abstract

Pricing copyrighted works or assets has always been a difficult task given the information good character of such works. Doing it in the digital era is even more challenging. Striking a proper balance between creators' right to a fair compensation from the market value of their works and users' right to the benefits of digital technologies through proper efficient levels and bases of royalty rates require that the competitive value of copyrights be ascertained. This paper reviews some of the challenges and pitfalls in adequately framing the issues and proposes an approach to characterizing the proper competitive value of music. The competitive value of music is inferred from the observation of the behavior and choices of operators of commercial radio, satellite radio, and interactive music streaming services. The approach developed leads to clear cut estimates of fair and efficient royalty formulas and payments, compatible with a level playing field of competition between industries and technologies. An Appendix presents the main characteristics of music copyright structure in different jurisdictions.

INTRODUCTION

There is currently an important debate among both academics and professional practitioners on the proper definition, coverage and characterization of intellectual property rights of all kinds: patents, copyrights, trademarks, etc. In many jurisdictions, the legal foundations and enforcement of intellectual property rights are being questioned and reconsidered in the context of the digital era. New laws and extensive revisions of existent laws are discussed with powerful political and business groups on all sides of the debates.

At the center of those debates one finds arguments on the costs and benefits of protecting and enforcing intellectual property rights. The balance of costs and benefits is seen differently by different actors. Some see the costs of such policies, in terms of a lower dissemination of creations and innovations and therefore a loss of socio-economic value as well as of further creations and innovations, as larger than benefits. Others see those benefits, in terms of adequate protection of intellectual property rights allowing proper compensation of creators and innovators thereby inducing them to increase their valuable and significant but risky investments in the production of creations and innovations, as overshadowing costs.

Clearly, intellectual property rights should not be an impediment to further creations and innovations and therefore, should be properly defined and restricted in time and scope. The balancing act here is to provide sufficient incentives for creators and innovators while at the same time foster the dissemination of creations and innovations. This is where market and market-like institutions for transactions on intellectual property rights, including fair use/dealing exceptions, compulsory licensing, as well as administrative boards and tribunals¹ acting as social welfare maximizers or market surrogates, can play a major role.

¹ Such as the US Copyright Royalty Board for sound recordings, the US Rate Courts for musical works, the Copyright Board of Canada for literary and musical works and sound

The recorded music and book publishing industries are particularly important in the digital economy. First, recorded music and books are prone to digitization. Second, new technologies used to sell and distribute music and books on the Internet (webcasting and on-demand streaming, e-books) raise the possibility of large-scale dissemination as well as customization at relatively low marginal costs. Those technologies open recorded music and book markets to increased intensity of competition due to the lower costs of entry for creators (authors, composers and performers) on a world-wide and time-wide scale.

Those developments raise new risks of copyright erosion and inadequate compensation for creators. It becomes increasingly difficult to affirm and enforce traditional intellectual property rights and significant challenges pave the way to copyright reforms aimed at reaping the benefits of the digital technologies while protecting creators.

Copyright comes in many forms: the exclusive right of authors, composers and music publishers to the communication/transmission as well as to the reproduction of their works, the fair compensation right of performers and makers of sound recordings. The communication / transmission and the reproduction of works and sound recordings come also in different forms, depending on the industry considered and the technology used.

Two principles are at the forefront of the copyright pricing challenge: first, the competition principle to ensure that all uses of musical works and sound recordings, whether in hard or digital form, compete for customers on a level playing field; second, the competitive market value principle to ensure that the compensation of rightsholders achieve fairness for both users and rightsholders as well as efficiency and effectiveness.

The challenges are numerous: (a) Musical works are *costly* information goods: the creation or production of the first copy may require significant resources of the

recordings and other similar institutions elsewhere. See the Appendix for a brief survey of the different institutional framework of different jurisdictions.

intellect (human capital) and may be risky, but once created the work can be consumed simultaneously or not by multiple users without depleting the quality or quantity of the good available to any of them; (b) Digitization is a drastic innovation that reduces significantly the dissemination costs of music and books, thereby challenging the delicate balance between the creators' right to a fair compensation and the users' right to the benefits of digital technologies, an issue made even more challenging and exacerbating as musical works are “information” goods; (c) Copyright made works excludable information goods, thereby favoring the emergence of markets and surrogate institutions, but the excludability level that copyright was supposed to ensure may have become too severe for the digital world, hence less efficient and less effective than before; the advent and growth of digital technologies have favored an increase in the value of music, but at the same time put more emphasis on making it more available than before, in a sense reducing the desirable level of excludability; (d) The digital revolution comes at a time when the “value” of copyrighted musical works appears to be both significantly underestimated and continuously eroded by new copyright exceptions and limitations.

Pricing copyrights in such a context with the objective to achieve both the *proper* compensation of creators for the costs and risks they incur and/or for the value they create and the *proper* if not maximal dissemination of creations may require to move away from traditional heuristics toward sounder analytics. Indeed, the current procedures for determining royalty payments and rates are based on path-dependent heuristics and rules of thumb with weak foundations in theoretical and applied economics.

The pitfalls are also numerous: (a) Moving away from simple heuristics and traditional analysis toward sounder analytics and a renewed institutional framework is a demanding endeavor, which could be miscarried if not properly understood; (b) A major pitfall in reaching proper (competitive market) compensation is that rates are typically determined in a sequential fashion, with each Collective going to the Board on a standalone basis, thereby making it difficult for the Board to make significant adjustments. If all rates were to be

determined at the same time, a level playing field of competition could be maintained with the different rates being based on proper competitive market values. Making changes in a sequential fashion may prevent the unavoidable challenges of the status quo; (c) There is a real danger to inadvertently tilt the level playing field of competition between different delivery technologies, namely traditional, analogue, digital, and Internet technologies, of musical works, which are all competing for listeners' ears; (d) There is also a real danger to lose sight of the forest for the trees, as the big picture itself keeps evolving; as the US Copyright Office (2015) puts it: "The Copyright Office has previously highlighted the outmoded rules for the licensing of musical works and sound recordings as an area in significant need of reform. Moreover, the Office has underscored the need for a comprehensive approach to copyright review and revision generally. This is especially true in the case of music licensing—the problems in the music marketplace need to be evaluated as a whole, rather than as isolated or individual concerns of particular stakeholders."

The fundamental issues or questions before us are the following. What is the competitive market value of copyright given the "information good" aspect of copyrighted works (music and books) as the advent of digitization make the emergence of properly functioning competitive markets difficult if not impossible? How to balance the creators' right to a fair compensation and the users' right to the benefits of digital technologies, at a time when the conflict between fairness and efficiency has become more acute than ever before?

The competitive market value argument, which is the foundation of the proper compensation of creators, relies on the consumers' valuation of music and willingness to pay for it. But the ways payments are to be made may not be the traditional ways (tariffs or per play rates). A consumers' economist would say: Although we value music a lot and want to consume more of it and although we want providers of such goods to be properly compensated (competitive market compensation), the pricing of such goods should take into account the fact that music is an information good or asset and the fact that adding consumers or

enhancing dissemination of works cost almost nothing. This calls for a significant reassessment of both the way copyright protection has historically been understood and the channels through which creators' proper compensation can be achieved, at best a difficult multifaceted endeavor, whose end point solution likely lies outside the box.

Section 1. Copyright and the New Digital Economy

With these trends as background, the digital era can be defined as encompassing drastic innovations in the production and distribution or dissemination technologies as well as business organization and governance associated with the digitization of goods and services and the digitalization of firms and businesses.² Their impacts on the competitive landscape of markets, in particular markets for intellectual property products such as copyrighted musical works, is of major importance. All current and past musical works of the world are literally and increasingly becoming available to all at a low if not zero marginal dissemination cost.

The significant reduction of dissemination costs of music and books poses important challenges for the delicate balance between creators' right to a fair compensation or a fair share of the market value of their works and the users' right to the benefits of digital technologies.

The situation is made even more challenging as musical works are “information goods”: once produced, each unit can be “consumed” by all, as one person's use (listening or reading) of a work does not prevent its simultaneous or subsequent use by others. Moreover, musical works are assets that survive indefinitely with

² The Oxford English Dictionary (OED) traces the first uses of the terms 'digitization' and 'digitalization' in conjunction with computers to the mid-1950s. In the OED, digitization refers to “the action or process of digitizing; the conversion of analogue data (esp. in later use images, video, and text) into digital form.” Digitalization, by contrast, refers to “the adoption or increase in use of digital or computer technology by an organization, industry, country, etc.”

no physical depreciation. Hence, they are better referred to as “information assets”.

Although related, the “information asset” character of copyrighted musical works sound recordings and the digital character of music are two different challenging factors in the current copyright landscape. The first one relates to the permanence of the product or asset as my consumption of a unit does not destroy the unit, which remains fully and unabatedly available for someone else now and in the future, while the second one relates to the distribution or dissemination costs of that product or asset.

According to Nielsen Music360 Report (2015),³ Americans streamed 135 billion tracks in the first half of 2015, an increase of more than 90% from the first half of 2014. However, only 9% of them expect or are likely to subscribe or pay for streaming music in the next 6 months. The authors of the report wonder why the vast majority of people are thus refusing to put their hand in their pocket to have access to (almost) all the music in the world.⁴

Therefore, music streaming is the fast growing segment of the music industry, but people seem reluctant to paying for the service because they know in a sense that the dissemination costs of music are close to zero. The same trends goes on for books and e-books. The Malka Report (see below) lists 21 planned “compulsory” exceptions to EU copyright law. If enacted, they would seriously undermine the capacity of the book publishing industry to pay fair compensation to authors and creators. One of those exceptions for instance could allow libraries to lend e-books without limit of time or number, a serious threat of cannibalization of book and eBook sales and possibly of royalties.

Before the advent of digitization, music and books were information assets whose distribution costs were significant, while those costs are now reduced to almost zero. Marginal distribution or dissemination costs were possibly sufficiently high

³ <http://www.nielsen.com/us/en/insights/reports/2015/music-360-2015-highlights.html>

⁴ Spotify, the leading interactive streaming service, has over 30 million pieces of music in its repertoire.

to allow profits over variable costs to cover the cost of creation itself through royalties. It may not be the case anymore.

The digital revolution comes at a time when the “value” of copyrighted works appears or is claimed to be both significantly underestimated and continuously eroded by new copyright exceptions, while being challenged by users’ groups among others claiming that a reduction in copyright scope and duration would favor an increase in social and economic welfare as well as a more intensive and extensive development of innovations and creations.

Striking the right balance between creators’ and users’ rights in such a context is a difficult and multifaceted endeavor for all those different reasons. In a nutshell: musical works are *costly* information assets; digital technologies reduce the marginal cost of dissemination or distribution of works to almost zero; copyright made works excludable information assets, thereby favoring the emergence of markets and market-surrogate institutions, but this excludability level may have become too severe for the digital world, hence possibly less efficient at its current level and less effective than before.

The digital era raises significant challenges for the valuation and pricing of musical works, recorded music and e-books. Hence the importance for economic theorists and empirical economists to take a serious look at the paradigm-changing potential that comes from large scale digitization, digitalization, dissemination and customization both to better understand those phenomena and to suggest adequate efficiency-prone policies.⁵

Indeed, two important objects of economics as a social science are first the analysis of static and dynamic *mechanisms* that can best contribute to meeting the virtually unlimited needs of human beings with the limited resources available to them, and second the design and characterization of those *institutions* that can implement or concretize those mechanisms. The appropriate welfare-generating production and distribution mechanisms and institutions will depend on the nature and characteristics of the goods and services that citizens and consumers demand or need.

⁵ The Honorable David R. Strickler of the US Copyright Royalty Board, the institution responsible for the determination of royalty rates and terms for statutory licenses of copyrights on sound recordings, emphasizes the judicial need for continued and comprehensive research in copyright economics in “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.

Hence, the world of copyright is in deep turmoil. And questions are raised. Why do we observe an increasing breath, intensity and scope of fair use/dealing exceptions? If fairness in compensation must be based on competitive market compensation, then what is “competitive market compensation” level in the context of information assets with quasi zero dissemination or distribution costs (digital technologies)? Should fair use/dealing provisions be compensated? If yes, by whom? What about other exceptions?

Recent debates and projects of reforms

Four recent reports among others spell out those concerns:⁶ Caroline de Cock, *The Copyright Manifesto* (January 2015); Julia Reda (Committee on Legal Affairs of the European Parliament), *Draft Report on the implementation of Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society* (January 2015); Maurice Malka, *2015: The End of Copyright – Taking for free is Stealing* (2015); and The US Copyright Office, *Copyright and the Music Marketplace: A Report of the Register of Copyrights* (February 2015)

In *The Copyright Manifesto* (January 2015), Caroline de Cock, coordinator of the advocacy group Copyright 4 Creativity, claims that the current fragmented copyright system in Europe is detrimental to the development of creativity in the digital age. She proposes an extension of fair use exceptions and their harmonization across Europe. She writes: “Under current EU law, copyright harmonization is limited to the exclusive right of the rightholder of an original work, but fails to address the other part of the system, namely the exceptions and limitations”; “libraries, archives and cultural heritage institutions are limited in their public mission to provide access to and preserve knowledge and culture, as copyright rules or licensing conditions prohibit them from embracing technological evolution”; and “In Europe, innovators often have to rely on exceptions and limitations to give them room to spread their wings.”

⁶ Some reports deal with both musical and literary works.

She argues in favor of a so-called modernization of copyright laws and regulations, including the extended fair use/dealing exceptions to be made mandatory across the European Union and the reduction of copyright duration. She calls for more “thorough analysis of the economics underlying the creation and dissemination of culture.”

In *Draft Report on the implementation of Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society* (January 2015), Julia Reda, rapporteur of the Committee on Legal Affairs of the European Parliament, echoes similar concerns namely that⁷ “The provisions of 2001’s copyright directive have not been able to hold step with the increase of cross-border cultural exchange facilitated by the Internet. The current copyright regime hinders the exchange of knowledge and culture across borders. To meet current challenges, the legislation needs to be updated to current practices and harmonised further.”⁸ The report promises that authors’ rights will be strengthened but does not include specific measures to that effect. It does argue for harmonization across Europe with a reduction of copyright duration and easier access to copyrighted works through digital technologies, making expanded exceptions mandatory across Europe, and favoring transformative creations, that is, the creation of new works by transforming existing ones (remixes and mashups). Regarding those, she writes “Copyright legislation should not stand in the way of this unprecedented wave of emerging creative expression and should recognise *new creators* as valid cultural actors and stakeholders” (emphasis added). The report proposes an important specific expansion of fair use provisions for research and education and an additional exception for libraries to make lending of books in digital forms (e-books) easier and more pervasive.

⁷ This refers to *Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society* [the so-called InfoSoc Directive].

⁸ See Julia Reda, Reda Report Draft – Explained at <https://juliareda.eu/copyright-evaluation-report-explained/>

Those two reports were sharply criticized by copyright lawyer Richard Malka⁹ in a pamphlet *2015: The End of Copyright? Taking for free is Stealing*. He summarized the attempt to renew European copyright laws as follows: “[T]he European Commission, confronted with an individual in perfect health, has pronounced him ill in order to cure him with lethal medication.” He claims that the European copyright system is complex but functional, that it is far from broken as it is the result of numerous “compromises that have been reached by mutual consent,” and that there is no reason to introduce a whole set of new exceptions that would benefit large multinational corporations at the expense of creators and rightsholders.

Malka claims that those newly defined exceptions “would be so far-reaching and so hard to monitor that the principle of sales-related compensation become as fictional as teleportation.” Among the newly defined exceptions that Malka considers dangerous for rightsholders, one find the redesigned right for libraries to lend e-books and give access to their collections (risk of cannibalization from less controlled or uncontrolled eBook lending); the text and data mining exception allowing users “to copy protected content found in digital data bases free of charge, in order to undertake research on that content and create, out of this extraction, original content”; the educational exception which “would authorize the free copying of portions of content for educational purposes, which would de facto lead to the exponential growth of unrecorded copies that would unfairly compete with publishers’ offerings” and introduce a risk of devastating the textbook market; the fair use exception; and the exception for transformative use.¹⁰

In *Copyright and the Music Marketplace: A Report of the Register of Copyrights* (February 2015), an official report of the US Copyright Office USCO, Maria A. Pallante, Register of Copyrights and Director of USCO, develops “a series of guiding principles and preliminary recommendations for change ... meant to be

⁹ And a long time counsel of *Charlie Hebdo*.

¹⁰ Richard Malka’s representation of the Reda Report may at times be somewhat exaggerated in its description of some of the proposed exceptions and in its evaluation of the risks that rightsholders are facing. Nonetheless, his analysis is clearly of high relevance.

contemplated together, rather than individually.” Affirming that the time is ripe to question the existing paradigm for the licensing of musical works and sound recordings, the report addresses concerns of songwriters and recording artists “that they cannot make a living under the existing structure” while “music publishers and performance rights organizations are frustrated that so much of their licensing activity is subject to government control” and therefore constrained in the marketplace and making it difficult to innovate. As in Europe there is a general if mixed consensus in the USA regarding the need for reform. But the consensus brakes down when specific measures and changes are considered, especially if they are considered individually.

Among the most important recommendations of the USCO, one finds the following five. First, the need to extend the public performance right in sound recordings to terrestrial radio broadcasts; Second, the adoption of a unique market-based rate setting standard, whether denominated “willing buyer/willing seller” or “fair market value” hence mimicking rates that would be negotiated in an unconstrained market, in order to stop the subsidization by music creators of users who seek to profit from their works; Third, the licensing of mechanical rights on a blanket basis bundled with performance rights, possibly under the same collectives, with an opt-out option for digital rights; Fourth, the creation of a general music rights organization GMRO to maintain a publicly accessible database of musical works and sound recordings appropriately matched to simplify and facilitate more efficient licensing; Fifth, the regrouping of all government rate setting under the Copyright Royalty Board, hence the abolishment of rate courts currently in charge of setting rates for musical works.

The advent and growth of digital technologies have favored an increase in the value of musical works insofar as consumption has increased, but at the same time have put more emphasis on social demands to make them more available than before, in other words have put more emphasis on reducing the excludability that the granting of copyright was and is supposed to ensure.

Such a proposed policy of making music and books more widely available, that is, freer or at lower prices overall, begs the question: who should bear the cost of

such a policy? The creators as providers of musical works and sound recordings? Alone or along with some other groups? Indeed, the cost of a public policy of enhanced dissemination of copyrighted works through lower royalties and expanded exceptions and limitations of copyright can be expressed in terms of the compensation of creators. Whatever the public policy pursued, it would be wrong to simply expropriate the intellectual property of rightsholders without properly compensating them. And properly compensating rightsholders requires ab ovo a sound understanding of the competitive market value of copyright in musical works.

The de Cock Manifesto and the Reda Report briefly discussed above may be relatively extreme demands for reforms of copyright laws and regulations with their calls for reducing the duration of copyright and for expanding the exceptions and limitations (including fair use/dealing provisions) to the expression of copyrights, but they are part of a larger “free music and books” movement.

Fair use/dealing in copyrighted works is a central exception,¹¹ although not the only one in the current debate. It warrants more discussion as one must properly

¹¹ Fair dealing in the UK/Canada is an expression equivalent to the US fair use but their nature and scope differ in many ways. For a comparative analysis of fair use in the US and fair dealing in the UK and Canada, see G. D'Agostino (2008), “Healing Fair Dealing? A Comparative Copyright Analysis of Canadian Fair Dealing to UK Fair Dealing and US Fair Use,” *McGill Law Journal* 53(2), 309-364. It might be interesting to mention at the outset that the US Copyright Office leaflet on Fair Use (2009) states (passim): the right to reproduce or to authorize others to reproduce the work is subject to certain limitations, one of the more important ones being the doctrine of “fair use.” This doctrine has developed through a substantial number of court decisions over the years and has been codified in Section 107 of the law with a list of purposes for which the reproduction of a particular work may be considered fair: criticism, comment, news reporting, teaching, scholarship, and research. The distinction between fair use and infringement may be unclear and not easily defined as there is no specific number of words, lines, or notes that may safely be taken without permission and simply acknowledging the source of the copyrighted material does not substitute for obtaining permission.¹¹ The Office goes on by stating that copyright protects the particular way authors have expressed themselves but it does not extend to any ideas, systems, or factual information conveyed in a work. The

understand and apply the present and proposed fair use/dealing objectives and provisions as well as the associated jurisprudence and regulatory frameworks. A rigorous economic analysis is essential for that matter, as fair use/dealing is too important to be left to legal squabbles.¹² The analysis of fair use/dealing falls at the intersection of law and economics, more specifically within a law and economic framework.¹³

Section 2. The Gordian Knot of Copyright Pricing and Compensation

The most important *general* principles that have been present in numerous if not all decisions of the different copyright boards and authorities are the following: the economic concept of works as information assets, the socio-economic efficiency criteria, the willing buyer willing seller paradigm, the willingness to pay and the ability for the rights by different users, the concept of proxy for an inexistent price and its different forms, and finally the role of the copyright boards

safest course is always to get permission from the copyright owner before using copyrighted material. When it is impracticable to obtain permission, use of copyrighted material should be avoided unless the doctrine of fair use would clearly apply to the situation. If there is any doubt, it is advisable to consult an attorney.

¹² For such an advanced economic discussion of fair use/dealing provisions in the context of the Supreme Court of Canada landmark CCH decision of 2004, see Marcel Boyer, "The Economics of Fair Use/Dealing: Copyright Protection in a Fair and Efficient Way", *Review of Economic Research on Copyright Issues* 9(1), 2012, 3-46. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2101080##

¹³ There is an extensive and conflicting literature (mainly legal in scope) on the nature, role and desirability or necessity of fair dealing and fair use exceptions in copyright laws. This literature is comprised of academic articles as well as analyses of (best) practices related to these exceptions, through case law and jurisprudence. Besides the fact that simply reviewing the most important contributions would require a whole paper, it would make us lose sight of the chosen limited and specifically economic scope. For such more comprehensive overviews, see in particular W.J. Gordon (1982), "Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and Its Predecessors," *Columbia Law Review* 82, 1600; W.M. Landes and R.A. Posner (1989), "An Economic Analysis of Copyright Law," *Journal of Legal Studies* 18, 325-354; L.P. Loren (1997), "Redefining the Market Failure Approach to Fair Use in an Era of Copyright Permission Systems," *Journal of Intellectual Property Law* 5, 1-58; M. Africa (2000), "The Misuse of Licensing Evidence in Fair Use Analysis: New Technologies, New Markets, and the Courts," *California Law Review* 88, 1145-1184.

and commissions or authorities, under different institutional settings, acting as surrogates of competitive markets and informed negotiations.¹⁴

How can we define the level of production of or investment in an information asset to ensure not only that the maximum well-being is provided to citizens but also that existing institutions (markets, competition, regulations) will be able to achieve this level of production or investment? It is a complex issue.

For normal goods and services, the optimal level of consumption is generally considered to be the level achieved when the price of the good is equal to its marginal production cost, insofar as demand or total consumption of the good at this price is such that the total net surplus generated, defined as the total value of consumption less the total cost, is positive. Otherwise, it is better not to produce the good in question. Thus the *optimal* consumption level (production, distribution, and dissemination) is either zero or equal to the level obtained with marginal cost pricing. This level corresponds to what economists call a first-best optimum, which requires that fixed costs be covered one way or another. A competitive market is generally the preferred mechanism for defining and achieving an optimal level of production and consumption for normal goods.

With information goods or assets, the problem is somewhat more difficult since the same unit (think of a musical work or sound recording) can be listened to and enjoyed many times by many different users or consumers now and in the future as consumption does not destroy or alter the unit in question. The optimal production level will therefore involve the marginal cost and the *sum* of marginal values enjoyed over time by all users: as long as the former is lower than the latter, it will be welfare enhancing to produce the unit in question. And additional units should be produced as long as the sum of marginal values enjoyed over time through multiple uses by multiple users remains above the marginal cost incurred by creators as investors, hence till the point where the two are equal. Meeting such a condition is difficult as it implies, when the sum of marginal values is equal to marginal cost, that marginal values across users will differ.¹⁵

¹⁴ For more on this set of principles in the context of hearings and decisions of the Copyright Board of Canada, see Marcel Boyer, "The Canadian Copyright Board: Economic Concepts and Principles in Decisions and Arguments", pp. 61-99 in Ysolde Gendreau (ed.), *Copyright Board of Canada: Bridging Law and Economics for 20 years*, Carswell, 2011.

¹⁵ Achieving the optimality condition through decentralized decision making by individual users would for instance require different prices for different users in order to induce them to consume the proper quantity, each user thereby facing his own particular price (Lindhal equilibrium). The sum of those individualized prices must then be equal to and sufficient to cover the marginal cost of production.

However, for an information good or asset whose marginal cost of distribution is zero or almost zero, under the digital technology revolution, the optimality condition requires that the sum of users' marginal values be equal to zero, which implies that each and every user's marginal value be equal to zero. Clearly, a common price equal to the marginal cost of (re)production will not enable the creator/seller/producer to generate enough revenue, in fact any revenue, to cover all costs involved in generating and marketing the information asset, and in particular the significant fixed costs, including the proper compensation for risk taking.

Indeed, the fact that the same unit of an information asset can be used or consumed by many, at the same time or not, means that the good survives consumption: the marginal cost of adding one user or consumer, or for that reason any or almost any number of additional users or consumers can be done at zero cost, almost forever.

A competitive market, which would implement the condition "price = marginal cost = 0", cannot therefore ensure an optimal allocation of resources unless and until the compensation of fixed costs of production or creation is achieved. With a zero price, too few individuals would be prepared to take up a career as a creator and to devote the time and resources needed to generate zero-priced information assets, namely original musical or literary works.

In response to these problems, two streams of thought have developed. The first argues that one ought to assign property rights to creators over their created assets, in particular over the transfer and reproduction of their creations, and allow markets to emerge and determine equilibrium prices, that is, prices that ensure that creators and consumers/users are satisfied with the exchange or transaction level that would thereby be achieved.

Because of the property right conferred, creators might be able to restrict access to those users or consumers who actually pay for this access. The resulting equilibrium price would be higher than the marginal cost and could make it possible to cover all of the production and distribution costs, at the expense of lower than optimal consumption levels or use levels (second best) of the asset.

The other stream of thought argues that the strict attainment of an optimum must be promoted with transfer, reproduction and consumption allowed at marginal cost, hence free of charge (first best). Creators should then be compensated in various ways from some combination of private sponsorship and grants, concerts with limited admission capacity hence priced above zero, and government subsidies.¹⁶

Each of these approaches poses problems.

¹⁶ As in some sports where achievements as well as live and recorded performances have some resemblance with musical works and sound recordings.

Overly strict copyright provisions could give the producers of the work a monopoly over the asset, or group of assets if creators can regroup under a common roof: the price of each unit could then be too high and the number of creations distributed or disseminated too low, that is, less than optimal because of the resulting limited access to and distribution of the works, thereby reducing the production of new works as each new work is in some sense the indirect result of previous works: “A dwarf sitting on a giant’s shoulders can see much farther than the giant.”¹⁷

Free use has its own set of problems. If an organization of private parties or governments had to fund the production of works through fixed or variable grants to creators and to that effect keep a record of every use, how could it establish the absolute and relative value of the works produced in order to properly compensate creators? The organization might want to control its disbursements, reduce them or even link them to arbitrary factors, to the detriment of creators and users. Which and how many authors or creators would spend time and resources to produce quality works whose valuation depends on the goodwill and sagacity of some organization of private parties or government bureaucracies?

Economic analysis can provide or at least suggest answers to these questions. The problem is complex, as Cooter and Ulen (1998)¹⁸ suggested: “Put succinctly, the dilemma is that without a legal monopoly not enough information will be produced but with the legal monopoly too little information will be used.” Obviously, solutions will not be completely efficient or first-best optimal.

In other words, as Lenard and White (2015)¹⁹ phrase it: “Musical works are classic examples of ‘information goods’. Such goods are characterized by large (and sunk) ‘first-copy’ costs and very low - even zero - costs of reproduction. This suggests that optimal prices would not be based on costs anyway, but instead

¹⁷ Jean de Salisbury (1159), *Metalogicon*, University of California Press (1955 edition), 305 pages: “Bernard of Chartres used to say that we are like dwarfs on the shoulders of giants, so that we can see more than they, and things at a greater distance, not by virtue of any sharpness of sight on our part, or any physical distinction, but because we are carried high and raised up by their giant size.”

¹⁸ Robert Cooter and Ulen, *Law and Economics*, HarperCollins Publishers, 1998.

¹⁹ Thomas M. Lenard and Lawrence J. White (2015), “Moving Music Licensing into the Digital Era: More Competition and Less Regulation,” Technology Policy Institute, Washington, December.

would be based on demand characteristics. If fixed costs are non-trivial and if marginal costs are constant with respect to the volume of output, then the ‘first-best’ system of pricing from a social efficiency perspective - prices should be equal to marginal costs - will not allow the sales revenues to cover those fixed costs. A ‘second-best’ alternative to cover those fixed costs, with the least distortion of social efficiency, should be sought.”

The whole art lies in finding a solution that can be useful and be implemented at low cost while at the same time come close to an optimal allocation. The best that one can hope for would be to regulate market pricing in order to minimize distortions from the first-best solution, that is, to introduce appropriate distortions-minimizing wedges between prices and marginal costs to meet a budget objective, which in the present context takes the form of a proper competitive compensation level for creators.

A combination of the above.

The first-best solution is to price at marginal cost and find other ways than revenues generated from sales to compensate creators, as those revenues will not be sufficient to do so. The second-best solution is to introduce wedges between prices and marginal costs in the different market segments, or at different links in the chain between creators and users or consumers, in such a way that the resulting use or consumption levels allow the proper compensation of creators but diverge as little as possible from the first-best ones.

This can be done through what economists call the “Ramsey inverse elasticity” principle or pricing rule: wedges between prices and marginal costs should be inversely proportional to the elasticity of demand, that is, be higher when demand is less elastic, indicating a low reactivity of users or consumers to price increases. In this way, second-best consumption levels will remain as close to first-best levels as possible given the budget constraint.

One may also think of a combination of the above two solutions: partly first-best principled and partly second-best principled. The problem and its solutions are complex and it is important to remember that as soon as one enters into a realm of solutions that have imperfect and incomplete information bounds or constraints placed upon them, the best becomes the enemy of the good: things gets messy when “you run with the hare and hunt with the hounds.”

What should be the creators’ compensation constraint to impose on the overall pricing system? That is another Pandora’s Box. The historical prices and royalty revenues effectively received by rightsholders are of little help here as they were obtained and developed through self-referencing rate determination procedures and hearings, with little if any theoretically-sound empirical justifications.

It is the competitive market value that provides the compensation constraint to be imposed on the overall pricing system. Since musical works and sound recordings are information goods or assets, the determination of relevant tariffs rests not so much on the cost of creation, which is underlying the supply function of new works and new sound recordings, but rather on the value of such goods for the users.²⁰ We thus need a more rigorous basis for ascertaining the value of copyrights, that is, the competitive market value of copyright in copyrighted works or assets.

The next section deals with musical works, not literary works, which will be treated in another paper.²¹

Section 3. The Search for Value: Terrestrial (Hertzian) Radio

The terrestrial (Hertzian) radio industry has many characteristics that make it suitable to derive or infer the objective market-based value of music copyrights. It is a mature industry with good business data, hence can be analyzed without too many restrictive or outside a priori assumptions. Indeed, we will see that the

²⁰ The Canadian Copyright Board recognized, in its 2002 Pay Audio Decision, that:

“the important notion that in information industries, pricing tends to be based on the value to the buyer, not on cost to produce.”

²¹ See Marcel Boyer, “The Future of Copyright in the Digital Ear: The Discovery of Copyright Value” (forthcoming, 2017).

available data, potentially obtained under court order, allow us to derive the competitive market value of music in Hertzian radio (HR).²²

Once this value is obtained, one can proceed to determine the competitive market value in Internet non-interactive radio (IR) on the basis of the level playing field principle, that is, on the basis that competition between these two forms of radio, competing for listeners, be engaged on equal terms insofar as the price of music, their critical input, is concerned. We can then extend the analysis to steaming interactive services by using a market proxy for interactivity from the music downloads market. This will be done in another paper.²³

What is the business of a commercial radio station? We can assume that the objective of a commercial radio broadcaster is to maximize profits or station value by capturing a particular niche audience to be sold to interested advertisers. The broadcaster achieves this by offering a combination of music and talk (hosts, DJs, and other on-air personalities) of a particular genre. The crucial decisions are then: what genre of music and talk to broadcast and how to split the program time between music M and talk T, given the choices made by competitors.

For profits to be maximized, it must be the case that at the margin, the last minute of talk and the last minute of music brings the same net advertising revenue, that is, have the same marginal contribution to profit or station value; otherwise, the operator would change the program mix to get a higher level of profits. Station profit or station value maximization requires that the per-minute marginal value be the same for music and talk. Let us say that happens for the program time split

²² This section is based on two publications. The first one is Paul Audley and Marcel Boyer, "The 'Competitive' Value of Music to Commercial Radio Stations," *Review of Economic Research on Copyright Issues* 4(1), December 2007, 29-50 [reprinted in Audhi Narayana Vavili (ed.), *Music Copyrights: A Legal Wrangle*, Amicus Books, 2009; translated in Spanish "El valor competitivo de la musica para las estaciones de radiocomerciales", In Watt, R. (Ed.), *Teoría econnómica y derechos de autor* (205-244). Datautor, Madrid (2011); and extensively reviewed in the PriceWaterhouseCoopers (Australia) Report, *Valuing the use recorded music*, July 2008. The second publication is Marcel Boyer, *The Value of Copyrights in Recorded Music: Terrestrial Radio and Beyond*, Commentary #419, C.D. Howe Institute, Toronto, February 2015. Available at: https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary_419.pdf

²³ See Marcel Boyer, "The Future of Copyright in the Digital Ear: The Discovery of Copyright Value" (forthcoming, 2017).

(M^*, T^*) , expressed in minutes or percentages of available program time. This implies an *implicit* competitive market price per minute P , the same for both music and talk, that is, if this price or cost per minute of music and talk was in effect, the broadcaster would choose the program mix (M^*, T^*) .

Observing the program mix (M^*, T^*) chosen by the broadcaster and the compensation of talk PT^* , available from the accounting data of the radio station, one obtains an implicit competitive market per minute price P equal to the total compensation of talk divided by the number of minutes of talk T^* . The competitive market compensation of music can then be obtained as $PT^*(M^*/T^*) = PM^*$. Hence, the competitive market value of music is revealed by or inferred from the behavior and choices of the commercial radio broadcaster or broadcasters. Hence the following basic proposition:

The competitive market values/compensations of music and talk are necessarily proportional to their “shares” of broadcast time.

The above proposition or theorem has NOT been obtained from a heuristic or historical approach and it is NOT an opinion, a belief, or a value judgement. It follows from (i) the assumption of profit or station value maximization and (ii) two elements of information or observable elements, namely the chosen program mix (M^*, T^*) and the competitive compensation of talk expressed as PT^* determined on a competitive market and willingly paid by the broadcaster.

Two important caveats.

It may be useful to recall some caveats here. First, competitive markets compensate inputs at their marginal values, not at their total values for the firm (buyer), here the broadcaster: hence, competitive market values of music and talk will be as usual potentially much lower than their respective total values for the broadcaster. Second, talk may be “more important” than music (in terms of total value) to radio broadcasters even if or even when the competitive compensation of music is larger.

An illustrative application based on Canadian data.

To illustrate further the power of the above arguably simple model and analysis, let us consider the data from the Canadian commercial HR industry. The figures are rounded out. Total advertising revenues of the Canadian commercial terrestrial radio industry reaches some 1.6 billion C\$ in 2015. The total music royalties payable by the industry, at the nominal (before deductions) rate of 11.15% of revenues amounts to 180 million C\$; after different deductions are applied, this amount falls to 100 million C\$ or 6% of revenues.²⁴

The data to implement the above analysis is readily available from CRTC, Statistics Canada, and the financial reports of the HR operators. As we showed above, we need two pieces of information: the share of programming time allocated to music by HR operators and the programming costs per minute of non-music content.

Based on data obtained in the course of hearings before the Copyright Board of Canada in 2004,²⁵ Audley and Boyer (2007) obtained that Talk received about 18.8% of total revenues, which would amount today to about 300 million C\$. They also obtained that music represents on an advertising-weighted average basis at least 60% of program time,²⁶ hence that $(M^*, T^*) = (60\%, 40\%)$.²⁷ Applying

²⁴ In Canada, music royalties are paid by commercial HR stations as a percentage of advertising revenues (total revenues). Hence, the marginal cost of broadcasting more minutes of music is literally zero as the percentage of revenues appear as a fixed cost of music input. In other words, a station broadcasting music 45% of program time and another station broadcasting music 65% of program time, both with similar advertising revenues, would pay the same amount in music royalties.

²⁵ Paul Audley, Marcel Boyer and Stephen Stohn, "The Value of Performers' Performances and Sound Recordings to Commercial Radio Stations," a report filed on behalf of NRCC now Re:Sound (NRCC-7) for the 2004 commercial radio hearings, Copyright Board of Canada.

²⁶ The Audley-Boyer estimate is an advertising-price (rate card) weighted share of music across different parts of the day. It is therefore not directly comparable to the other estimates..

²⁷ Other sources come to different shares of music and talk through different methodologies applied to different periods, different contexts, and different samples: (70%, 30%) in Steven Globberman (2007), "Determining the Appropriate Increase in SOCAN Tariff Payable for the Public Performance of Musical Works," a report filed on behalf of the Canadian Association of

the theorem above, the competitive market value of Music amounts to $18.8(60/40) = 28\%$ or revenues, or $300(60/40) = 450$ million C\$.²⁸ This amount would be larger if we were to consider a larger percentage share of music in program time.²⁹

We saw above that the total royalties paid by the commercial radio industry in Canada amounts to about 100 million C\$. Hence the question: where is the missing 350 million C\$? We know already that some 80 million C\$ are due to different forms of deductions and exceptions, financed by rightsholders to the benefit of users, broadcasters, and other stakeholders. Hence the net amount missing and unaccounted for is today of the order of 270 million C\$. If music is mispriced as it appears to be, then its missing value is, as usual in such cases in any industry and for any input, captured by other stakeholders.

Who are the stakeholders in the value created by the commercial HR industry? We can regroup those into five different groups. First, the music content providers, that is, authors, composers, songwriters, music publishers, artists, performers, and makers of sound recording (record labels). Second, the talk content providers, that is, hosts, DJs, and other on-air personalities. Third, other inputs such as the owners, operators, managers, capital providers, workers, employees, materials and equipment suppliers, etc. Fourth, the advertisers who buy from the broadcasters the access to audiences of particular interest. And

Broadcasters (CAB-6) for the 2007 commercial radio hearings, Copyright Board of Canada; (81%, 19%) in Erin Research (2008), “The Use of Music on Commercial Radio, 2008 Sounds Recordings as Feature Content on Music Stations”, a report filed on behalf of CSI (CSI-03.L), for the 2008-2009 commercial radio hearings, Copyright Board of Canada; (81%, 19%) in Copyright Board of Canada (2014) Decision on “Re:Sound No. Tariff 8 – Non-interactive and semi-interactive webcasts, 2009-2012.”; (67%, 33%) in David Touve (2015), “\$0.0000955: The value of a Spin, per Listener, to Songwriters on US Radio in 2014” <https://rockonomic.com/0-0000955-the-value-of-a-spin-per-listener-to-songwriters-on-us-radio-in-2014-bb232821d46f> . Touve writes: “Estimating the number of songs played per hour on US Radio appears to be a mix of Art and Science.”

²⁸ This is inclusive of HR cost of the music programming that is not related to royalties (about 1.9% of revenues).

²⁹ For instance, if we were using Globerman (2007)’s shares (70%, 30%), we would obtain $18.8(70/30) = 44\%$ of revenues or $300(70/30) = 700$ million C\$ for the competitive market value of music, again inclusive of HR cost of the music programming that is not related to royalties (about 1.9% of revenues).

finally, the end consumers as listeners and their governments as their collective representatives. If this list of stakeholders is reasonably complete, they must collectively account of the value created but not captured by rightsholders, although it is not clear which stakeholders capture what shares of the missing competitive value of music. The identification of those stakeholders and their respective shares in the capture of music value remains an open question.

Section 4. The Search for Value: Satellite Radio

As the terrestrial/Hertzian radio industry, the satellite radio industry has many characteristics that make it suitable to derive or infer the competitive market value of music copyrights. It is a well-developed and established industry with good business data, hence can be analyzed without too many restrictive or outside a priori assumptions. We will see that the available public data allow us to derive a competitive market value of music properly grounded in economics.

What is the business of a satellite radio (SR) provider? We can assume that the objective of a SR provider is to maximize profits or business value by attracting subscribers to its ad-free service and capturing a particular niche audience on its ad-based service to be sold to interested advertisers. The provider achieves this by offering a combination of different genre of music, talk and music-talk stations, with talk comprising hosts, DJs, and other on-air personalities. The crucial decisions are then: the portfolio of genre-specific stations to offer and the specific mix of music and talk to provide on each of those stations in order to attract ad-free subscribers and ad-based listeners.

For profits to be maximized, the SR provider must evaluate how much subscribing and advertising revenues is generated by the program inputs used, namely music, talk and others. It must be the case that at the margin, the last unit of talk used and the last unit of music used bring similar revenues, that is, have the same marginal contribution to profit or business value; otherwise, the SR provider would change the portfolio of genre-specific stations and the program station mix or mixes to get a higher level of profits.

The relevant fundamental proposition from economic theory is that the marginal value of a factor or input is equal to the (marginal) capacity of the last unit of the

input expressed in terms of the additional quantity produced (here the number of additional subscribers/listeners attracted), that is, the marginal product of the input, times the value for the SR provider of those additional subscribers/listeners, that is, the unit revenue the provider can generate or capture from its subscribers/listeners.

On competitive markets for inputs and products, each input is used up to the point where the value for the firm of the last unit used, given by its marginal product times the “price” at which the firm can sell its products or services, is equal to the price of the input on the market. In the context of a SR provider, the value of music, like any factor, is given by its capacity, at the margin, to attract additional subscribers/listeners times the value of those additional subscribers/listeners for the firm (in economic jargon, the marginal value product of music).

In other words, let us consider the observed quantity of music used by the SR provider together with the capacity of the last unit used to attract subscribers/listeners as well as the value of those additional subscribers/listeners for the firm, all data typically known to the firm. If the competitive market price of a unit of music were given by or set at the value of those additional subscribers/listeners for the firm (the marginal value product of music), the firm would buy or provide the quantity of music it is providing or using. In that sense, the marginal value product of music is its competitive market value. Hence,

The competitive market values/compensations/prices of music and other inputs in satellite radio are necessarily proportional to their relative capacities to attract subscribers/listeners.

Again, the above proposition or theorem has not been obtained from a heuristic or historical approach and it is not an opinion, a belief, or a value judgement. It follows from (i) the assumption of profit or service value maximization and (ii) the relative capacities of different contents or inputs to generate additional net revenues (their relative marginal value products). The chosen combination of inputs must satisfy the above proposition.

It may be useful to recall again the two caveats mentioned above, which applies here too. First, competitive markets compensate inputs or contents at their marginal values, not at their total values for the firm (buyer), here the SR provider: hence, competitive market values of music and talk observed in SR will be as usual potentially much lower than their respective total values for the SR provider. Second, the competitive compensation of music may be larger than the competitive compensation of talk, even if or when talk content is “more important” than music in terms of total value to the SR provider.

An illustrative application based on US Sirius XM data.

Sirius XM offers “a dynamic programming lineup of commercial-free music plus sports, entertainment, comedy, talk, news, traffic and weather, including: an extensive selection of music genres, ranging from rock, pop and hip-hop to country, dance, jazz, Latin and classical; live play-by-play sports from major leagues and colleges; a multitude of talk and entertainment channels for a variety of audiences; a wide range of national, international and financial news; exclusive limited run channels; and local traffic and weather reports for 21 metropolitan markets throughout the United States” (Annual Report, page 2).

From the 2015 annual Report (SEC 10-K filing) of Sirius XM,³⁰ we learn that it offers over 175 audio channels (72 ad-free, 15 news & issues, 11+ sports, 9 traffic & weather, 22 talk & entertainment, 18 Latin, 9 comedy, 14+ other), which subscribers/listeners can package in different ways. Its total revenues for 2015 reached US\$4.57 billion, of which 84% are due to subscribers, 2.7% are due to advertising, and 13.3% are composed of revenue and royalties from the sale of satellite radios, components and accessories and “amounts earned from

³⁰ “Sirius XM is an American broadcasting company that provides three satellite radio and online radio services operating in the United States: Sirius Satellite Radio, XM Satellite Radio, and Sirius XM Radio. The company also has a major investment in Canada called SiriusXM Canada, an affiliate company that provides Sirius and XM service in Canada. At the end of 2013, Sirius reorganized their corporate structure, which made Sirius XM Radio Inc. a direct, wholly owned subsidiary of Sirius XM Holdings, Inc. Sirius XM Radio was formed after the U.S. Federal Communications Commission (FCC) approved the acquisition of XM Satellite Radio Holding, Inc. by Sirius Satellite Radio, Inc. on July 29, 2008, 17 months after the companies first proposed the merger. The merger brought the combined companies a total of more than 18.5 million subscribers based on current subscriber numbers on the date of merging. The deal was valued at \$3.3 billion, not including debt. Through Q3 2016, Sirius XM has 31 million subscribers.”

subscribers for the U.S. Music Royalty Fee, revenue from our connected vehicle business and our Canadian affiliate and ancillary revenues.”³¹ Total royalties reached 10% of total revenues in 2015 (9% in 2013, 11% in 2017) or US\$457 million, with the number of subscribers reaching 29.6 million.

Available data from Sirius XM will allow us to determine the competitive market value of music in satellite radio. To do this, we will first consider the nature of the contract Sirius XM signed with its main talk attraction namely host Howard Stern. We will be able to determine what the profitability of this host is for Sirius XM and how this profitability is linked to its compensation. We will then apply the same methodology to determine the value of music to Sirius XM. The data come from the 2006 hearings of the US Copyright Royalty Board and in particular from the October 2006 Report filed by Michael Pelcovits on behalf of SoundExchange before the U.S. Copyright Royalty Board.³²

The market price the SDARS would pay for sound recordings should be consistent with the market prices paid for other content. Dr. Pelcovits’ analysis of the prices the SDARS pay for other content suggest a comparable return to sound recording rights holders would be 24.5% of SDARS’ total revenues. Dr. Pelcovits uses one well-defined example of non-music content, about which there is the most information available in the public domain: the amount Sirius XM paid for the right to carry Howard Stern’s programming. The amount Sirius XM paid for Howard Stern and for other content on a per-customer-acquired basis ought to

³¹ We learn from Sirius XM website that the U.S. Music Royalty Fee is calculated as a percentage of the subscription price of packages that include musical performances. The U.S. Music Royalty Fee rate has remained at 13.9% since January 5, 2015. Intervening subscription rate increases, however, have caused the monthly U.S. Music Royalty Fee to adjust upward. Some Sirius XM packages are not charged a U.S. Music Royalty Fee: News, Sports & Talk; Traffic, Travel Link, Weather, Marine Weather, and Aviation Weather. The maximum U.S. Music Royalty Fee monthly value is reached “if you have premium channels and any channels beyond your Base 50. If you do not have premium channels and any channels beyond your Base 50, then your U.S. Music Royalty Fee will be lower.”

³² Testimony of Michael Pelcovits *In the Matter of Adjustment of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services* (Docket No. 2006-1 CRB DSTR), October 2006.

equal the amount Sirius XM would pay for sound recordings on a per-customer-acquired basis.

Sirius XM paid Howard Stern approximately \$415 million in net present discounted value for the rights to carry Stern's programming for five years. Financial analysts, some of them briefed on the Stern transaction by Sirius, generally put the number of incremental customers Sirius expected to gain from Howard Stern's programming at less than 1.75 million net customers. Hence, Sirius XM paid \$237 per subscriber to Stern for the incremental subscribers (\$415 million divided by 1.75 million subscribers).

Using a 42 month average life for the typical Sirius customer, Dr. Pelcovits calculates that Sirius XM paid Stern about \$5.64 per month for each incremental subscriber (\$237 divided by 42). Sirius is expected to generate \$10.25 per subscriber per month in 2006, rising to \$11.65 in 2010 (the last year of Stern's contract). Sirius XM paid Stern from 48% ($\$5.64/\11.65) to 55% ($\$5.64/\10.25) of revenue for each subscriber that his programming attracted to Sirius. That makes an average of slightly above 50% of revenue.

We learn from the testimony of Yoram Wind (October 2006) on the survey he conducted on SDARS subscribers³³ that 41% of subscribers to SDARS would drop the services if there were NO music and 15% more would then be willing to pay an average reduced price of 7.27\$ per month, that is 44% less than the regular price of 12.95\$ per month. If SDARS were to drop their price to 7.27\$ per month for all 59% of subscribers still on board, revenues would drop by 67% ($41\% + 59\% \times 44\%$). If SDARS maintained their price at 12.95\$ per month, then 56% ($41\% + 15\%$) of customers would drop the service and revenues would therefore drop by 56%. Hence the second alternative would be better and therefore, one can conclude that music generate 56% of subscribers to SDARS or in others words that SDARS would lose 56% of subscribers if no music were offered.

³³ Testimony of Yoram (Jerry) Wind *In the Matter of Adjustment of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services* (Docket No. 2006-1 CRB DSTRA), October 2006 (Appendix K, Figures 1 and 2).

If music content were to receive 50% of the revenue for the 56% of the customers attracted to the SDARS by music, it would receive 28% ($50\% \times 56\%$) of the revenue associated with all of the SDARS' customers. In other words, based on what Sirius XM paid for Howard Stern's programming, in a similar marketplace transaction, one would expect music content to receive approximately 28% of revenue for use of its licenses.

In sum, if Sirius XM paid the sound recording owners an amount comparable to what it paid Howard Stern in an open marketplace transaction, it would pay approximately 24.5% of revenues to SoundExchange and another 3.5% to music publishers. With revenues of US\$4.57 billion in 2015, this would represent US\$1.28 billion in royalties. Given that Sirius XM paid 10% of revenues (US CRB PSS-SDARS decision 2012) in royalties that year, the missing value due to rightsholders amounts to US\$823 million in 2015.

Where is that missing value? As argued above, if music is mispriced as it appears to be in SR, then its missing value is, as usual in such cases in any industry and for any input, captured by other stakeholders.

Who are the stakeholders in the value created by the SR industry? As in the commercial HR industry, we can regroup those into five different groups: the music content providers, the talk content providers, the owners, operators, managers, capital providers, workers, employees, materials and equipment suppliers, etc., the advertisers, and the end consumers as subscribers/listeners and their governments as their collective representatives. Those stakeholders collectively account of the value created by but not captured by rightsholders, but again it is not clear who captures what share of the missing competitive market value of music.

Section 5. The Search for Value: Interactive Music Streaming Services

The interactive music streaming services industry has characteristics that make it suitable to derive or infer the objective market-based value of music copyrights. It is an unregulated industry with sophisticated buyers and sellers of licences for accessing musical works and sound recordings and with good business data, hence can be analyzed without too many restrictive or outside a priori

assumptions. This industry is in a sense simpler than commercial HR industry and the SR industry because there is only one content namely music, but that simpler structure may make it more difficult to infer the competitive market value of music from market data in the interactive music streaming services industry. We will show that it is nevertheless possible to do so.

What is the business of an interactive music streaming service? We can assume that the objective of an interactive music streaming service provider is to maximize profits or the service value by attracting subscribers. The provider achieves this by offering a freemium service, that is, basic features are free with advertisements, while additional features plus improved streaming quality and offline music downloads are available with paid subscriptions giving access to a large repertoire of sound recordings embedding musical works with significant flexibility left to subscribers to choose his or her preferred musical works and artists.

The crucial challenges are then to negotiate with music labels the acquisition of the largest possible repertoire at the lowest possible cost and to price its services given the characteristics of other offerings of music on the market. Given that an interactive music streaming service is simply repackaging/reselling music, sound recordings embedding musical works, the revealed competitive market value of music is directly obtained through the financial data of the service provider, the service production function being quite simple.

The competitive market value/compensation/price of music in the interactive music streaming services industry is by definition the per-play rate paid by the services, which includes a premium for interactivity

The above proposition or theorem rests on the relatively competitive negotiation process in place between major sophisticated players or agents on both sides of the transaction namely the interactive music streaming services and the music labels and other rightsholders' representatives. The proposition has not been obtained from a heuristic or historical approach and it is not an opinion, a belief, or a value judgement.

An illustrative application based on business and financial data from Spotify and Pandora.

Overall, Spotify negotiates licences/contracts with record labels and media companies to use their repertoire and make it available to its customers/listeners. The payments made by Spotify may be considered “competitive” given its specificities in the OMS industry and the presence of active and sophisticated competitors on both sides of the transactions. Let us consider the data from Spotify and compare them with data from the semi-interactive music streaming service Pandora.

Spotify is primarily an interactive streaming service present worldwide. It has 90 million active global users as of December 2015, of which 31.5% are subscribers responsible for 90% of revenues.³⁴ Other listeners are on the free but constrained and ad-based service. Spotify has about 20 billion listening hours per year or 300 billion plays per year and its annual revenues are €1.95 billion in 2015 with an 80% growth rate between 2015 and 2014 after a 45% growth rate between 2014 and 2013.

Spotify incurred in 2015 content acquisition costs of €1.63 billion or 83.6% of its revenues. Content acquisition costs are almost totally royalties and are function of the country of sales, the # and % of subscribers, the relative country premium pricing and exchange rate, the country laws and regulations on copyrights. This represents an 85% growth rate between 2015 and 2014 after a 46% growth rate between 2014 and 2013.

Hence the per-play rate paid by Spotify in 2015 is €0.0054 (or US\$0.006) per play.

³⁴ Data on Spotify obtained from *Music Business Worldwide* (Tom Ingham, May 23 2016), based on Spotify's financial filing in Luxembourg uncovered by MBW, as reported at:

<https://www.musicbusinessworldwide.com/spotify-revenues-topped-2bn-last-year-as-losses-hit-194m/>

Pandora³⁵ is primarily a semi-interactive streaming service mainly present in the U.S. It has some 81 million active users in December 2016, of which 4.4 million are subscribers (5.4% of users).³⁶ Pandora claims 20 billion listener-hours.³⁷ It is interesting to note that the total radio listening hours in the U.S. in 2016 is split as follows: HR 79%; Pandora 10%; SR 8%; others 3%. Of the total music streaming hours in the U.S. in 2016, 55% were on Pandora, 32% on Spotify, 8% on iHeart, and 5% on other platforms; on a worldwide basis, Pandora and Spotify have about the same number of listening hours. Pandora's annual revenues reached US\$1.385 billion in 2016 and its content acquisition costs (royalties) reached US\$734.4 million or 53% of revenues.

Hence the royalty rate paid by Pandora in 2016 is US\$0.00245 per play.

To compare the per play rate of Pandora and Spotify, we must account for the value of interactivity or selectivity that is present on Spotify but much less on Pandora. Using data from the music downloads delivery platforms, we can estimate that the value of selectivity, measured as the price for downloading one single track from an album relative to the per track price for downloading the whole album, is 1.92.³⁸ Hence, the equivalent non-interactive or semi-interactive per play rate of the interactive per play rate paid by Spotify can be estimated as $US\$0.006/1.92 = US\0.003125 , about 28% more than Pandora's per play rate paid in 2016.

³⁵ Pandora, U.S. SEC 10-K filing for 2016

<http://investor.pandora.com/Cache/38090352.pdf>

³⁶ Those users have created some 7 billion stations on Pandora since 2005 (each subscriber can create 100 stations) versus less than 4000 terrestrial radio stations in the U.S.

³⁷ About the same as total listener-hours to music-format radio stations in Canada, of which recorded music account for 65.7%.

³⁸ See Marcel Boyer, Joel Blit and Paul Audley (2013), "The Value of the Use of the CSI Repertoire by Online Music Services," a report filed as Exhibit CSI-3 in the case CSI Online Music Services (2011-2013), SOCAN Tariff 22.A – Online Music Services (2011-2013), SODRAC Tariff 6 – Online Music Services, Music Videos (2010-2013), [Copyright Board of Canada](#).

This indicates that if Spotify per play rate paid in 2015 corresponds to the competitive market value of music on interactive music streaming services, then the Pandora per play rate should be 28% higher than it is in 2016, that is, Pandora royalties are too low by US\$202 million in 2016. In other words, the competitive market value of music on Pandora is about US\$936 million compared to royalties effectively paid of US\$734 million.

This undervaluation of music on Pandora semi-interactive streaming service is most probably due to the regulatory institutional framework that rules royalty fixing and directly influences and determines Pandora per play rate, while it influences only indirectly Spotify per play rate. Again, if music is mispriced as it appears to be on Pandora, then its missing value is, as usual in such cases in any industry and for any input, captured by other stakeholders, including the owners, operators, managers, capital providers, workers, employees, materials and equipment suppliers, etc., the advertisers, and the end consumers as subscribers/listeners and their governments as their collective representatives.

Section 6. The Three Legged Stool of Music Value

The proper value of music and the ensuing fair compensation of creators correspond to what would be paid on well-functioning competitive markets. In a general context with multiple parties as buyers and sellers, a *competitive equilibrium* is a situation in which economic forces are balanced with a stable resting point suitable for both willing buyers (demand) and willing sellers (supply).

When considering whether or not to use a good, buyers would compare the (marginal) utility or value derived from the use of the good to the market price and buy only if such value is larger than its price. Similarly, the sellers would compare the (marginal) cost of producing and making the good to the market price and agree to produce and sell only if such cost is less than or equal to the price.

Therefore, a price that corresponds to a competitive market price or a properly negotiated price would necessarily account for balance between creators' interests

and users' interests since any investments, costs, risks, and derived benefits would be incorporated in the demand and supply functions and would thus be reflected in the resulting competitive market or negotiated price. Given this price, the buying party is deriving maximal value from using the good or input and the selling party is properly and fairly compensated for its costs, each party being free to accept the transaction.

However, as mentioned above, musical works are different from standard goods like apples or cars; they are information goods. Information goods have the particularity that they can be consumed simultaneously by multiple users without depleting the quality or quantity of the good available to any of them.³⁹ In the context of musical works, negotiations are typically conducted between parties, implicitly or explicitly. Thus, a properly negotiated price between sophisticated and symmetric parties is analogous to a competitive equilibrium price.

Differences in cost structures, namely cost of entry and cost of audience reach, favor different royalty formulas in different industries although those industries compete with each other up to a certain point for listeners' ears. In HR industry, costs of entry (broadcasting spectrum licence) and fixed costs of audience reach (broadcasting equipment) are relatively high while marginal costs of audience reach are relatively low, even zero. This favors a percentage of revenues formula. In music streaming or webcasting services industry, costs of entry are relatively low while fixed and marginal costs of audience reach (bandwidth costs) are relatively high and increasing with audience size. This favors a per play rate formula. Hence, a royalty formula expressed as a percentage of revenues is socially efficient for HR and SR and a royalty formula expressed as a per play rate is socially efficient for interactive and semi-interactive music streaming or webcasting services.

³⁹ Despite this particularity, the same fundamental principles apply. However, two possibilities arise: either users pay the same price regardless of the value they derived from the work or users pay in some proportion to the value they draw from the good. The latter case is referred to as Lindahl pricing.

A percentage of revenues formula means that the marginal cost of music use by terrestrial or satellite radio providers is zero since two radio stations using the same amount of music but generating different revenues would pay different royalties while two stations generating the same revenues but using different amounts of music would pay the same royalties. In a sense, under a percentage of revenues formula, royalties are a “fixed cost” independent of music use. Per play rates in webcasting and music streaming services allow rightsholders to avoid being “residual payees” and favor healthy competition by eliminating uncompetitive webcasters who use huge amount of recorded music with little revenue generating capacity, reducing destructive competition intensity (Bertrand trap), and inducing webcasters, as resellers of recorded music, to develop value added features such as the interactivity (Spotify) or genomic features (Pandora). In Sections 3, 4 and 5, we derived the competitive market value of copyrights in music from three different industries and three different methodologies, defining the three legged stool of music value.

We showed in Section 3 above that for commercial terrestrial/Hertzian radio, the relative competitive market values of music and talk are necessarily proportional to their respective shares of program time. In the Canadian context this value is equal to 28% of revenues. And it is socially efficient that royalties be expressed as a percentage of revenues in the case of commercial terrestrial/Hertzian radio.

We showed in Section 4 above that for satellite radio, the relative competitive market values of music and talk are necessarily proportional to their relative capacities to attract subscribers. In the case of US SR (Sirius XM), this value is equal also to 28% of revenues. And it is socially efficient that royalties be expressed as a percentage of revenues in the case of satellite radio.

We showed in Section 5 above that for webcasting or online music streaming services, the competitive market value of music corresponds to the unregulated and negotiated per-play rate paid by interactive music streaming services, including and adjusted for the value of interactivity. In the case of interactive music streaming service Spotify, this value is equal to 0.60 US¢/play (or US\$6.00 per 1000 plays). In the case of semi-interactive music streaming service Pandora,

this value is equal to 0.31¢/play (or US\$3.13 per 1000 plays). And it is socially efficient that royalties be expressed as a per play rate in the case of interactive or semi-interactive music streaming or webcasting services.

All three value estimates, qualifying as competitive market values, were obtained from observing the behavior and choices of operators / users, not from value judgments, and point to a similar competitive market value!

Given that the three music distribution technologies (HR, SR and OMS) are competing for listeners' ears, we must make sure that competition takes place on a level playing field. To verify if the above royalty formulas and rates satisfy this requirement, we must translate them into comparable royalty rates and payments.

The competitive market values of music in the Canadian HR industry and in the US SR industry were found to be 28% of revenues. Although we do not have the number of plays on satellite radio, we do have a good estimate of that number on Canadian HR radio. Given the number of listeners and the percentage of program time devoted to music on Canadian terrestrial radio, the 28% of revenues corresponds to a per play rate of between 0.235 C¢/play (based on Audley-Boyer 2007 mentioned in footnote 25) to 0.324 C¢/play (based on the average of five different reports mentioned in footnote 25 and 26).⁴⁰ These per play rates can be directly compared to rates paid by non-interactive or semi-interactive music streaming services. We showed above that semi-interactive service Pandora paid in 2016 a per play rate of 0.245 US¢/play, which is somewhat of the same order, before adjusting for the exchange rate, considering that those rates are regulated on different bases with different methodologies by different authorities. As for interactive music streaming services, the above rates must be adjusted upwards for the value of interactivity, which takes us to a range of 0.451 C¢/play (Audley-

⁴⁰ Given that the Canadian HR industry currently pays 100 million C\$ per year (180 million C\$ before deductions) in music royalties, this corresponds to 0.052 C¢/play (Audley-Boyer 60/40) or 0.094 C¢/play before deductions; or to 0.044 C¢/play (AVG5 71/29) or 0.079 C¢/play before deductions; or to 0.039 C¢/play (Board's 2014 81/19) or 0.07 C¢/play before deductions. Therefore, the Canadian HR industry currently pays between 0.039 C¢/play and 0.052 C¢/play.

Boyer) to 0.607 C¢/play (average of the five different reports). We showed above that interactive service Spotify paid in 2015 a per play rate of 0.600 US¢/play, which is somewhat of the same order, before adjusting for the exchange rate, given that the first two are regulated rates and the Spotify rate is a negotiated rate. Note also that the competitive market value rate for interactive service Spotify of 0.60 US¢/play (2015) suggests a competitive market value rate for non-interactive service Pandora of 0.31 US¢/play.⁴¹

General Conclusion

The analysis shows that the difference between the competitive market value of copyright in music, both musical works and sound recordings, and the royalties paid by users/operators may be qualified as significant. In the Canadian HR radio industry, the competitive market value of music is 4.5 times larger than the current level of royalty payments: 28% versus 6% of revenues. In the US SR industry (Sirius XM), the competitive market value of music is 2.8 times larger than current royalty payments: 28% of revenues versus 10%. In non-interactive webcasting (Pandora), the competitive market value of music is about 28 % larger than current royalty payments: 0.312 US¢/play versus 0.245 US¢/play. In all these cases, royalty rates are determined by regulatory bodies. As for the interactive webcasting or music streaming industry (Spotify), it is by definition at the proper level (0.600 US¢/play), given the unregulated negotiation process between Spotify and rightsholders (mainly music labels) in that industry. As shown above, all these estimates of the competitive market value of music copyrights point to a similar market value level compatible with a level playing field of competition among industries and technologies.

⁴¹ A note on YouTube (Google) may be useful here. According to the Recording Industry Association of America (RIAA), which represents the major music companies, YouTube pays 0.1 US¢/play in royalties. The company claims that it is advertising based and therefore more comparable to HR radio than to subscription-based interactive webcasting. Recall that the Canadian HR industry pays between 0.039 C¢/play and 0.052 C¢/play while Spotify pays 0.6 US¢/play (although the RIAA claims that Spotify pays closer to 0.7 US¢/play) and Pandora pays 0.245 US¢/play.

It is important to recall once again that the above estimates of the competitive market value of copyrights in music were obtained neither from a heuristic or historical approach nor from opinions, beliefs, or moral value judgments. They follow from (i) the assumption of profit or business value maximization as the objective of users/operators and (ii) observed behavior and choices of users/operators.

This begs the questions: Where are the missing values? If Governments and their royalty-fixing authorities (copyright boards and commissions) design and implement rules, regulations and exceptions that produce royalty rates significantly below competitive market value or tariff levels, thereby implicitly expropriating part of rightsholders' assets, who should pay for such policies?⁴²

One must exert care, prudence and diligence in generalizing the results of Sections 3, 4 and 5 across different jurisdictions and industries as copyright structures differ across jurisdictions (See Appendix). But the methodologies followed to characterize the competitive market value of copyrights in music could be used first to discover and unveil the appropriate data and also to derive credible estimates.

⁴² This question is tackled in Marcel Boyer, "The Future of Copyright in the Digital Ear: The Discovery of Copyright Value" (forthcoming, 2017).

Appendix - The Structure of Rights in Music (a short and preliminary survey)

The above analysis and proposition dealt with the overall value of copyright in musical works and sound recordings (and to a lesser degree in literary works). In reality, copyright royalties are determined through a somewhat decentralized system of negotiations and rate setting hearings.

In the musical industry namely terrestrial or Hertzian radio, Internet or non-interactive radio, and streaming or interactive services, as well as the direct sale of music on physical supports (CDs and others) or digital downloads, there are basically two copyrights, a performance right and a mechanical (reproduction) right, and two broad groups of rightsholders, a first group comprising authors, composers and music publishers who own the performance and mechanical rights in musical works or compositions, the so-called original or longtime rightsholders, and a second group comprising the performers and the makers of sound recordings (record labels) as well as other non-featured artists and musicians who own the performance and mechanical (reproduction) rights in the sound recordings, the so-called new or neighboring rightsholders (in most jurisdictions since the end of the 1990s).

Each of the four combinatory subsets, each subset being composed of one copyright and one group of rightsholders, is typically occupied by one or more Collectives in charge of representing the relevant rightsholders in negotiations or rate setting hearings before courts or regulatory bodies.

In the following paragraphs, the cases of US and Canada are first explicitly presented, followed by a discussion of different cases in European countries, namely France, Germany, United Kingdom and Spain. As we will see, the copyright landscape differs between jurisdictions: not all combinatory subsets are present in a given industry across jurisdictions and care must be exert when comparing royalties or rates between those jurisdictions.

In the following tables,

- “----” stands for the absence of a Collective organization responsible for collecting and distributing royalties, in which case rightsholders (such as

music publishers and record labels) negotiate licenses and royalties directly with users if and when a right can be exercised.

- “N.A.” stands for the explicit absence of a right to be exercised, because of a legal regulatory statute for instance.
- “I” stands for the first group of rightsholders as defined above, that is, authors, composers and music publishers (rights in musical works or compositions).
- “II” stands for the second group of rightsholders as defined above, that is, performers and record labels, as well as non-featured artists and musicians (neighboring rights in sound recordings).

The USA

1. Terrestrial radio, live venues, and other public places (clubs, restaurants, etc.)

Rights ↓	Rightsholders →	I	II
Public Performance		PRO: ASCAP, BMI, SESAC, GMR	N.A.
Mechanical (Reproduction)		N.A.	N.A.

PRO is the acronym of Performance Rights Organization. To avoid an exercise of market power by PROs, BMI and ASCAP are governed by consent decrees, which means that a “rate-court” can set the rates (per radio play, per stream, etc.) if no agreement between parties is reached. Hence the rate court is ultimately fixing the rate in any case. BMI and ASCAP are responsible for collecting performance royalties for musical compositions. In exchange for the power to collect on behalf of songwriters (authors and composers) across the land, they can only negotiate under the umbrella of this rate court.⁴³

The ASCAP and BMI consent decrees were enacted in 1941 as a resolution to antitrust cases brought up against the PROs. The decree maintained the PROs and therefore recognized implicitly the capacity of a PRO to efficiently reduce

⁴³ <https://www.royaltyexchange.com/learn/music-royalties/>

transaction costs in contracting and monitoring for both rightsholders and users.⁴⁴ The decrees (including subsequent modifications) restricted ASCAP's and BMI's capacity to negotiate and made the Federal District Court for the Southern District

⁴⁴ A long convincing if sobering quote from Lenard and White (2015) illustrates this point: "In the absence of PROs, publishers and other copyright owners would have to interact directly with users and distributors such as bars and restaurants, radio stations, and digital services. The number of transactions would be enormous. However, the terrestrial broadcast radio industry bargains collectively with ASCAP and BMI through the Radio Music License Committee (RMLC). Similar collective negotiation occurs between the Television Music Licensing Committee (TMLC) and the PROs. With PROs in the middle, each of the entities (and both sides of the transaction) only has to deal with the two organizations—ASCAP and BMI—for the composition rights for most music (and with SESAC and GMR for a much smaller amount) and, for non-interactive digital services, with SoundExchange for the administration of sound recording rights. The PROs themselves are able to take advantage of economies of scale in negotiating licenses, monitoring licensees, and collecting and distributing royalties. Transactions costs are further minimized through the use of the blanket license. The collective negotiation of rights, however, creates market power issues: ASCAP and BMI, for example, control the overwhelming majority of music composition performance rights in the United States. This market power is (in principle) limited by the consent decrees (as modified over the years) and the antitrust rate court, which determines rates if negotiations fail. Similarly, SoundExchange has antitrust immunity, which enables it to represent the record labels with respect to sound recording rights. By setting rates for statutory licenses, the CRB is a check on the actual or potential market power of copyright owners. Some licenses are negotiated without the benefit of a PRO intermediary, which suggests that the severity of the transactions cost issue differs depending on the license and on the parties that are involved. Interactive digital services, such as Spotify, are not covered by the CRB rate-determination process and negotiate directly with the record labels. Interactive services also pay royalties for mechanical rights (that non-interactive services are not required to pay), which reflects the belief that interactive services are a substitute for the actual purchase of the recording. Increasingly, as discussed below, distributors that would be covered by a statutory license, such as non-interactive services, are negotiating directly with record labels and publishers."

of New York an effective regulator or arbitrator responsible to hear the parties in negotiations, namely the PROs and user groups as would-be licensees, and set the terms of licenses including royalties to be paid for the use of musical works.

In the late 1990s, the US Congress enacted two Acts, the Digital Performance Right in Sound Recordings Act (DPRA) of 1995 and the Digital Millennium Copyright Act (DMCA) of 1998, which expanded copyright protection to sound recordings, both the public performance right and the mechanical (reproduction) right, when music is delivered through certain digital audio transmissions, such as the emerging satellite services (Sirius and XM) as well as forthcoming Internet-based radio and streaming services (Pandora, Spotify, and many others). Those acts made the licensing of music compulsory for non-interactive digital services.

Terrestrial radio do not compensate the second group of rightsholders when broadcasting over-the-air performers' performances and sound recordings. This arrangement is the result of a long-standing argument made by terrestrial broadcasters that performers and music labels benefit from the free promotion received through radio play. Broadcasters contend that airplay increases album sales, which leads to compensation for performers and record labels. As a result, broadcasters have been able, for decades, to convince Congress that they should be exempted from paying the public performance royalty for sound recordings.

But the broadcasters' argument is steadily losing relevance as album sales plummet, and their exempted status becomes more questionable and challenged when compared to other countries' broad requirements for performance royalties.⁴⁵

2. Internet radio (non-interactive or semi-interactive* webcasters like Pandora, Songza, Galaxie Mobile, plus over 2500 other services, and satellite services like Sirius and XM)

Rights ↓	Rightsholders →	I	II
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⁴⁵ See The Future of Music Coalition 2013 at <https://www.futureofmusic.org/article/fact-sheet/public-performance-right-sound-recordings>

Digital Performance	PRO: ASCAP, BMI, SESAC, GMR	PRO: SoundExchange (5 times more than I)
Mechanical (Reproduction)	-----	-----

A *non-interactive webcast* refers to a stream over which the recipient exercises no control over the content of the signal or the time of the transmission. A *semi-interactive webcast* enables only the (near) real-time communication of the streamed content, but allows recipients to exert some measure of influence over the content or timing of the webcast.

SoundExchange isn't governed by a consent decree, which means that it can negotiate on the free market. Recording artists are not compensated when their performances are played on AM/FM radio (because as stated above there's no performance right for recordings on terrestrial radio), but they are typically paid at least five times more than songwriters and composers when music is performed digitally, like on Pandora.⁴⁶ That's because of SoundExchange's negotiation power and BMI/ASCAP's legal antitrust limitations. AM/FM broadcasters do pay songwriters (more precisely authors, composers and music publishers), although at a royalty rate ultimately set by the courts.⁴⁷ SoundExchange, the PRO established by the Digital Performance Right in Sound Recordings Act (DPRA) of 1995,

⁴⁶ Some observers claim that Pandora pays about 10x more royalties to SoundExchange than to PROs representing authors, composers and publishers of musical works, the latter being covered by consent decrees (rates determined by "rate court" judges). See for instance <http://aristake.com/post/what-is-soundexchange-ascap-bmi-pros-hfa-mechanicals-and-how-to-get-all-your-royalties>

⁴⁷ <https://www.royaltyexchange.com/learn/music-royalties/>. Royalty Exchange is a form of Stock Exchange for royalties, as one can read on their website: "Founded in 2011, Royalty Exchange started after identifying the need for a centralized marketplace where royalty owners could monetize their royalties and investors seeking to purchase alternative assets could invest in them. Our mission is simply to provide a platform where all types of royalty assets, such as music, television and film or patents, intellectual property, and mineral rights, can be bought or sold in an effort to bring value to both the investor and seller."

distributes the royalty payments directly to performers (45 percent), to the sound recording copyright owners, most often the record label (50 percent), and to non-featured artists and performers (5 percent).⁴⁸

3. Music streaming services (permanent downloads, interactive* streaming services such as Spotify, Rdio, Apple Music, Google Play, Deezer, Tidal)

Rights ↓	Rightsholders →	I	II
Digital Performance		PRO: ASCAP, BMI, SESAC, GMR	PRO: SoundExchange
Mechanical (Reproduction)		HFA (now SESAC)	-----

An *interactive communication* is any form of streaming where a specific sound recording can be listened to at a time and place of the recipient's choosing. This includes services such as Spotify and Rdio.⁴⁹

HFA (Harry Fox Agency) issues mechanical licenses for products manufactured and distributed in the U.S. A mechanical license grants the rights to reproduce and distribute copyrighted musical compositions (songs) for use on CDs, records, tapes, ringtones, permanent digital downloads, interactive streams (Spotify), and other digital formats supporting various business models.

4.

R

ate or Price setting/regulating Organization

As mentioned above, performance rights collective organizations BMI and ASCAP are governed by consent decrees, which means that royalty rates can be set by a "rate-court" if necessary. BMI and ASCAP collect songwriting performance royalties for group I, but they are limited in their ability to negotiate

⁴⁸ See The Future of Music Coalition 2013 at <https://www.futureofmusic.org/article/fact-sheet/public-performance-right-sound-recordings>

⁴⁹ Spotify pays as royalties about 10% of its revenues to me and 60% to II.

by this rate court. Hence, AM/FM broadcasters do pay songwriters, but at a royalty rate ultimately set by the courts.

As Lenard and White (2015) put it: “The Digital Performance Right in Sound Recordings Act (DPRA) of 1995, and the Digital Millennium Copyright Act (DMCA) of 1998, which expanded copyright protection to public performances of sound recordings through certain digital audio transmissions ... also mandated compulsory licensing for non-interactive digital services. The rates that most digital services pay for sound recording performance rights under the compulsory license are determined by the Copyright Royalty Board (CRB). Royalties are collected and distributed by a new PRO, SoundExchange. SoundExchange also participates in CRB proceedings on behalf of the copyright holders. The CRB applies different standards in determining rates for different categories of digital services. Interactive digital services (e.g., Spotify) are exempted from the CRB process (which means that these services negotiate directly with the performing artists and labels). Terrestrial radio broadcasting is free of the necessity to seek such licenses at all ... and thus ‘pay’ a rate of zero”.

As Strickler (2015) put it: “In section 114 ratemaking proceedings before the CRB, the principal adverse parties are SoundExchange, which is the administratively-approved licensor collective, appearing on behalf of the record companies and other copyright owners; and the services/licensees that transmit sound recordings, whether pureplay non-interactive webcasters or non-interactive simulcasters on the Internet of terrestrial radio performances of sound recordings”.

CANADA

1. Terrestrial radio, live venues, and other public places (clubs, restaurants, etc.)

Rights ↓	Rightsholders →	I	II
Public Performance		SOCAN	Re:Sound
Mechanical (Reproduction)		CSI (SODRAC, CMRRA)	CONNECT, SOPROQ, and Others

2. Internet radio (non-interactive or semi-interactive webcast like Pandora, Songza, Sirius XM)

Rights ↓	Rightsholders →	I	II**
Digital Performance		SOCAN	Re:Sound
Mechanical (Reproduction)		CSI (SODRAC, CMRRA)	----*

3. Music streaming services (interactive streaming services such as Spotify, Rdio, Apple Music, Google Play, Deezer, Tidal)

Rights ↓	Rightsholders →	I	II
Digital Performance		SOCAN	Re:Sound
Mechanical (Reproduction)		CSI (SODRAC, CMRRA)	----

There are at this time no Collective involved in the determination and collection of performers' and sound recordings' (group II) mechanical (reproduction) royalty rates on Internet radio and music streaming services, as the labels negotiate directly with the users for the use and licensing of such rights if applicable.

4. Rate or Price setting/regulating Organization

In Canada, the Copyright Board of Canada, established in 1989, is an economic regulatory body empowered to establish, either mandatorily or at the request of an interested party, the royalties to be paid for the use of copyrighted works, "when the administration of such copyright is entrusted to a collective society," The Board can act as an arbitrator if the collective society and a user cannot agree on the terms and conditions of a license.

As stated on its website, the Board certify tariffs in the following fields: the public performance or communication of musical works and, since the 1997 amendment to the Copyright Act, of sound recordings of musical works, the retransmission of

distant television and radio signals, the reproduction of television and radio programs by educational institutions, and private copying.

The total amount of royalties generated by the tariffs the Board certifies is estimated at \$434 million in 2013: SOCAN collects \$220M, Retransmission \$109M, CSI \$33M, Re:Sound \$26M, Access Copyright \$18M (reproduction of literary works), Private Copying \$8M, Others \$20M.

EUROPE (France, Germany, UK, Spain)

This section provides a comparison between four European countries, namely France, the United-Kingdom, Germany and Spain, regarding the current situation on the determination and collection of author's rights (group I) and neighboring rights (group II).⁵⁰

FRANCE

1.

A

uthor's Rights Organizations

In terrestrial radio, live venues, and other public places, the organization responsible for the granting of licenses for public performance is SACEM (Société des Auteurs, Compositeurs et Editeurs de Musique). The collection and distribution of mechanical rights is made through the SDRM (Société pour l'administration du Droit de Reproduction Mécanique). SDRM includes the SACEM and the AEEDRM (Association des éditeurs pour l'exploitation des droits de reproduction mécanique). SDRM does not

⁵⁰ *Among the sources consulted for this section:*

http://ec.europa.eu/internal_market/copyright/docs/management/monitoring-report_en.pdf

http://ec.europa.eu/internal_market/copyright/docs/management/study-collectivemgmt_en.pdf

https://societe.sacem.fr/docs/SACEM_statutes_2015.pdf

https://circabc.europa.eu/sd/a/57a571ce-68d7-4014-9c0d-64955f39c8ed/sacem_fr.pdf

<http://www.scpp.fr/SCPP/Portals/0/DownLoads/Adhesion/REGLEMENT%20GENERAL%202011%20.pdf>

<http://www.spedidam.fr/medias/plaquette-spedidam-final-150306.pdf>

http://www.spedidam.fr/artistes/vos-droits/3_26_33_remuneration-equitable.html

<http://www.musikindustrie.de/lizenzen/>

<http://www.keanet.eu/docs/music%20licensing%20and%20transaction%20costs%20-%20full.pdf>

have its own repertoire of direct members. It has received the mandate to administer the repertoire of its founding member collectives.

In Internet radio (non-interactive or semi-interactive webcasting), SACEM is responsible to administer the public performance rights and the mechanical (reproduction) rights. For music streaming services (interactive services), SACEM is responsible to administer the public performance rights and the mechanical (reproduction) rights. Public performance rights and mechanical rights are noticeably not separated, but treated together within the framework of a form of exploitation.

2. Neighboring Rights Organizations

In Terrestrial radio, live venues, and other events in public places, SPRE (Société pour la Perception de la Rémunération Equitable) is responsible for the collection and the distribution of neighboring rights. It is composed of four organizations: ADAMI (Société pour l'Administration des Droits des Artistes et Musiciens Interprètes), SPEDIDAM (Société de Perception et de Distribution des Droits des Artistes Interprètes de la Musique et de la danse), SCPP (Société Civile des Producteurs Phonographiques), and SPPF (Société des Producteurs de Phonogrammes en France). SACEM was mandated by SPRE to collect the equitable remuneration from events in public places on SPRE's account, but SPRE carries out the collection from radios directly.

According to Article 214-1 of the Intellectual Property Code, the fees collected by SPRE within the framework of neighboring rights (group II) are allocated for 50% to the performing artists and 50% to the record labels. Regarding the fees distributed to performing artists, 50% are attributed to SPEDIDAM and 50% are attributed to ADAMI.

In Internet radio (non-interactive or semi-interactive webcasting), SCPP administers the performance rights. SCPP also administers mechanical rights in this area⁵¹. In music streaming services (interactive streaming services), SCPP directly collects royalty payments on behalf of its members when their music is reproduced (mechanical rights), communicated and/or made available to the

⁵¹ For this organization at least, we can find a confirmation in the information they disclose on its website that they effectively administer the rights mentioned.

public. SPPF has signed an agreement with Deezer in 2007⁵². Nevertheless, it is still unknown whether SPPF is today mandated to administer the neighboring rights related to the use of music on streaming services. According to its statutes (Art. 3.1), SPPF's mandate is to administer the rights pertaining to communication and reproduction recognized by Art. L214-1 and L311-1 of the Intellectual Property Code, in which there is no reference to music streaming services.

As for the exploitation of music in the case of web radios, SPEDIDAM states that performing artists in France do not perceive any right when their music is made available to the public through music streaming services or on-demand downloads. Their rights are not taken into account by the Intellectual Property Code (Art. L 212-3) in the way this article is written, and as such, SPEDIDAM advocates for changes in the law.

3. Rate or Price setting Organization

SACEM is the price setting organization for author's rights. When setting its tariffs, in accordance with the European Court of Justice's and the French court's and competition authorities' case law, SACEM takes into account the economic value of both the use of music in a particular context and the service it provides. In certain areas, SACEM's tariffs are accepted by representatives of music users through negotiations, when SACEM enters into collective bargaining agreements with users' associations / organizations.

⁵² « Jérôme Roger, le directeur général de la SPPF. « L'accord avec la SACEM est une condition nécessaire mais pas suffisante » pour que Deezer soit 100% légal, indique-t-il, ajoutant que la SPPF, qui peut négocier sur la musique en flux de type « webradio », n'est pas encore mandatée par ses membres pour engager des négociations concernant des offres de ce type. Elle se contente pour l'instant de « bien comprendre le modèle d'exploitation de Deezer » pour en expliquer le fonctionnement à ses membres, et le cas échéant, obtenir un mandat à partir du début de l'automne. » - Le Figaro (2007)

According to the article L214-4 of the Intellectual Property Code, the tariffs of the equitable remuneration (neighboring rights) are fixed by an Administrative Committee chaired by a representative from the State and composed in equal share of persons designated by the organizations representing music users on the one hand and of persons designated by the SPRE on the other hand. The decisions of the Committee are published in the “Journal Officiel de la République Française”.

Although French case law does not prescribe specific methodology criteria as such, French courts may issue a ruling involving a CMO’s tariffs (in particular in cases where users claim that tariffs are too high as an argument to justify their refusal to pay royalties for their use of music) which may have an impact on the concerned CMO’s tariffs.

The supervisory body of the collective societies in France is the “Commission Permanente de Contrôle des SPRD”, a committee affiliated to the “Cour des Comptes” (Court of Auditors), which supervises their accountancy and their management.

GERMANY

1. Author’s Rights Organizations

In terrestrial radio, live venues, and other events in public places (clubs, restaurants, etc.), GEMA (Gesellschaft für Musikalische Aufführungs- und mechanische Vervielfältigung) is responsible for granting licenses for both public performance rights and mechanical rights.

In Internet radio (non-interactive or semi-interactive webcasting) and satellite radio, GEMA is responsible for administering both digital performance rights and mechanical rights.

In music streaming services (interactive streaming services), GEMA is responsible for administering both digital performance rights and mechanical rights.

2. Neighboring Rights Organizations

In terrestrial radio, live venues, and other public places (clubs, restaurants, etc.), GVL (Gesellschaft zur Verwertung von Leistungsschutzrechten mbH) is mandated to manage both performance rights and mechanical rights.

In Internet Radio (non-interactive or semi-interactive webcasting) and satellite radio, licenses for neighboring rights in the online sector generally have to be obtained directly from the rightsholders, not the GVL. Exceptions are the usage of background music on websites and webcasting for which GVL has published tariffs.

In music streaming services (interactive streaming services), there is no collective organization mandated to manage neighboring rights in the online sector.

3. *Rate or Price setting Organization*

The Collective Societies in Germany are required by law to set up the tariffs and to publish them as well as any changes in the Bundesanzeiger (Federal Official Publication). Thus, GEMA sets itself the tariffs applying to author's rights, acting as an effective monopoly. The tariffs established by GVL depend on the kind of music exploitation and are set as a percentage of the GEMA-tariff.

In terrestrial Radio, both GEMA's and GVL's basis of calculation is represented by the revenue of the licensee. Further the tariff in both cases equals a percentage thereof limited by a minimum amount. But the rates differ significantly. For the minimum amount the GEMA uses a very sophisticated method for determining the proportion of music, the music share and duration of the program to set an appropriate minimum amount. But GEMA has no insight in GVL's methodologies for setting up the percentage or minimum regarding their Radio tariff.

GEMA-field service licenses background music/ communication to the public. With regard to background music (not the actual broadcast) the majority of the tariffs are negotiated with the respective user-associations.

For public performances (discotheques, restaurants, hotels, etc.), the majority of the tariffs are negotiated with the respective user-associations. GVL mainly set an additional fee as a percentage of the GEMA remuneration.

The supervisory body of the collective societies is the German Patent and Trademark Office - DPMA, which ensure that collective societies comply with the law.

UNITED-KINGDOM

1. Author's Rights Organizations

In terrestrial radio, live venues, and other events in public places (clubs, restaurants, etc.), PRS for Music is responsible for granting licenses for both public performance rights and mechanical rights. PRS for Music is an operational alliance between the Mechanical Copyright Protection Society (MCPS) and The Performing Right Society (PRS).

In Internet radio (non-interactive or semi-interactive webcasting) and satellite radio, PRS for Music is responsible to administer both digital performance rights and mechanical rights for authors (group I).

In music streaming services (interactive streaming services), PRS for Music is responsible to administer both digital performance rights and mechanical rights.

2. Neighboring Rights Organisations

In terrestrial radio, live venues, and other events in public places (clubs, restaurants, etc.), PPL (Phonographic Performance Limited) is the organization which administers neighboring rights in the UK⁵³. PRS for Music and PPL offer joint licensing arrangements for several kind of public places, such as schools, churches, small workplaces.

In Internet radio (non-interactive or semi-interactive webcasting) and satellite radio, PPL (Phonographic Performance Limited) is the organization which administers neighboring rights⁵⁴.

In music streaming services (interactive streaming services), PPL (Phonographic Performance Limited) is the organization which administers neighboring rights⁵⁵.

3. Rate or Price setting Organization

In the UK, the respective tariffs are set by the collecting societies, often following negotiation with a trade body for the relevant affected industry sector and/or key interested parties. A scheme may be referred to the Copyright Tribunal, which has certain powers to confirm or vary a scheme. During the course of negotiations with the relevant trade body, the threat of a tribunal reference may be made which in itself may have an impact on the tariff set as a result of that negotiation.

SPAIN

1. Author's Rights Organizations

⁵³ At least with regard to public performance. *PPL does not mention the administration of mechanical rights on its website.* Mechanical rights: still to be determined

⁵⁴ At least with regard to digital performance. Mechanical rights: still to be determined

⁵⁵ At least with regard to digital performance. Mechanical rights: still to be determined

In terrestrial radio, live venues, and other events in public places (clubs, restaurants, etc.), SGAE (Sociedad General de Autores y Editores - Collecting Society for Authors and Publishers) is the author's rights organization in Spain. It is mandated to manage both performance and mechanical rights.

In Internet radio (non-**interactive** or semi-interactive webcasting) and satellite radio, SGAE is competent to administer digital performance rights and mechanical rights for authors (group I).

In Music streaming services (interactive streaming services), SGAE is competent to administer author's rights with regard to digital performance in the field of music streaming services. SGAE's tariffs are 10% of the user's total income with respect to the streaming exploitations, and 12% of the user's total income with respect to downloading exploitations (2013).

2. Neighboring Rights organizations

In terrestrial radio, live venues, and other events in public places (clubs, restaurants, etc.), the management of neighboring rights is shared between two organizations, namely AIE (Artistas Intérpretes y Ejecutantes), which administers the rights of performing artists, and AGEDI (Asociacion de Gestion de Derechos Intelectuales), representing music producers. AIE and AGEDI work together with respect to the collection activity, through an organization called OCR (Organo Conjunto de Recaudacion).

In Music streaming services (interactive streaming services) is competent to administer neighboring rights within the framework of music streaming services.

3. *Rate or Price setting Organization*

Rates and tariffs are set by the collecting societies in their respective area, i.e. SGAE for author's rights and AIE-AGEDI for neighboring rights. For the latter, tariffs are fixed by common agreements between AIE and AGEDI. There have been several cases in which users appealed to the Spanish Competition Authority

to question the tariffs imposed by the collecting societies representing artists and producers. In many decisions rendered by the courts and authorities, these collecting societies were recognized as abusing a monopolistic position.

EU-wide licensing

Some EU-wide licensing initiatives are listed below:

- SACEM, SGAE, and the Italian SIAE launched ARMONIA (2007), a Joint-Venture whose mandate is to license the online and mobile uses of the repertoire of the three societies and manage their online rights.
- CELAS (Central European Licensing and Administration Services) has been set up by GEMA and MCPS-PRS to cover the EMI Music Publishing's Anglo-American and German repertoire for online and mobile uses.
- In an initiative called PEDL, (Pan-European Digital Licensing), GEMA, MCPS-PRS, and the Swedish STIM signed agreements with Warner/Chappell Music to provide EU-wide digital licenses covering Warner/Chappell's Anglo-American repertoire.
- SACEM-UMPG Initiative: SACEM and Universal Music Publishing Group signed an agreement covering online and mobile uses of their joint repertoire.