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EUROPE'S LOST ROYALTY OPPORTUNITY: A COMPARISON OF POTENTIAL AND EXISTING DIGITAL MUSIC ROYALTY MARKETS IN TEN DIFFERENT E.U. MEMBER STATES

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Abstract. A comparison of existing online revenues collected from digital music licenses and the potential royalty market for online music, suggests an inadequate royalty market capture within the European Union. An estimate of the 2012 market for digital music royalties in ten different E.U. countries indicates this market could have been well over €18 billion. However, only €116 million were reported by corresponding Collective Rights Management Organizations in that same year. The three largest digital music royalty markets (U.K., Germany and France) comprise around €11 billion. Yet, the corresponding Collective Rights Management Organizations (PRS for Music, SACEM and GEMA) generate only €95 million in royalty revenue from all online media. The gap between existing and potential royalties is tremendous and suggests that E.U. Member States have not come to grips yet with the internet. Their existing business models, paired with a regulatory environment rooted in the 19th century rationale of the Berne Convention has not been supportive of grasping the opportunities provided by a disruptive technology. By consequence, artists do not receive the royalties they deserve, commercial users are exposed to prohibitive license fees and non-commercial users suffer from adequate legal alternatives to digital piracy.

1. Introduction

The internet has opened previously unknown opportunities to disseminate content. It has broken with established patterns of production, dissemination and consumption of music. As such, it can be regarded as a disruptive technology. Being able to reach out to a wide audience of users at very low cost is a key feature of the internet. Essentially, the sharing of content has been drastically improved and the media environment provided by the internet has triggered a shift in how music is being consumed. Streaming and downloading music increasingly replaces the old-fashioned purchase of a CD, particularly among the next generation of users. Against

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this background the question arises as to what extent the European Union has succeeded in establishing adequate revenue collection models that allow to capture legitimate copyright royalties in online environments.

Traditionally, Collective Rights Management Organizations (CRMOs), including mechanical rights agencies and performance rights organizations, have played a critical role in collecting revenues for artists and establishing highly functional music licensing markets. CRMOs were created because it was believed that they reduced transaction costs associated with the large-scale usage of music royalties. Identifying and clearing rights, so the argument goes, was too complex a process to be left to the individual right holder. The pooling and clearing of rights under one single umbrella facilitated to a large extent the collection of licensing fees and allowed the individual artist to concentrate on her music. Yet, to what extent do CRMOs succeed in capturing licensing revenues for music consumed on the internet? Are these institutions fit for purpose and have they adapted to the internet?

To gain a better understanding how well existing institutional arrangements of CRMOs have succeeded in adapting to a disruptive technology, an estimate of the 2012 licensing market for digital music across ten different E.U. countries was undertaken. The estimated potential market size was then compared against the actual online revenues generated by CRMOs. With reference to Rochelandet (2003) it is illustrated that the challenge does not lie in the distribution efficiency of existing revenues captured by CRMO. The challenge lies in tapping into a completely new market segment that has been made possible through the internet and finding new business models to capture this market. The paper does not make an attempt to estimate the socially optimal level of royalty collections (Novos and Waldman, 1994) nor of the collective bargaining function of CRMOs (MacQueen and Peacock, 1995) as this has been discussed previously. This article's unique contribution to the field is an answer to the question of to what extent existing institutional arrangements with the European Union allow

the capture of music royalties on the internet and thus assure the promotion of creative and innovative expression by helping musicians get an income from all possible markets.

The study is structured as follows: First the established rationale for collective rights management is discussed from a transaction costs point of view. Then, a framework for assessing the current system under a New Institutional Economics (NIE) framework is provided and new challenges and opportunities in light of the internet are addressed. These are discussed from the perspective of competition, cross-border licensing and the fragmentation of musical repertoires. Then, the potential music online royalties are compared to current CRMO online revenues. In light of the empirical findings, it is argued that the existing framework for online revenues is inefficient. This insight is particularly interesting in light of the fact that CRMOs are highly efficient in distributing their existing revenues to artists. Only in digital environments existing E.U. institutions have not come to grips with the internet yet.

2. The Traditional Economic Rationale for Collective Rights Management Organizations

CRMOs enjoy a territorially limited legal monopoly in the European Union. It was believed at the time that that the wide spread usage of copyrighted work resulted in a significant amount of individual licensing transactions, be they of commercial or non-commercial nature. This would result in high transaction costs associated with a very wide number of individual licensing arrangements. CRMOs could mitigate these high transaction costs, while at the same time allowing for a higher transaction volume. The costs to licensors and licensees would thus otherwise be prohibitively high and mass licensing not be possible. Information, coordination and administration costs required to conclude and enforce license agreements through centralized institutions as costs would be prohibitively high if done individually (Besen, Kirby, and Salop, 1992).

Against this background CRMOs offered an attractive value proposition as they allowed to capitalize on economies of scale and scope in collective copyright management. Despite

high fixed costs and a relatively expensive administrative infrastructure, CRMOs reduced fixed administrative costs per member on average by increasing the volume of rights clearance transactions (Handke and Towse, 2007). Thus, the highest degrees of economies of scale could be achieved if the largest number of rightsholders entrusted their work to as few CRMOs as possible. CRMOs also capitalized on economies of scope in collective rights management, because the profitability of producing licenses could be increased when combining the rights under management (Riis, 2011). The pooling of copyrighted works seemed reasonable because a single point of access minimizes search and information costs. It also decreased bargaining and decision costs for both users and rightsholders, increasing the value of the product offered by rightsholders from the perspective of users. Economies of scope again were achieved via the issuance of blanket licenses for entire musical repertoires, a common practice amongst CRMOs. Blanket licenses reduced transaction costs while simultaneously increasing the number of musical works available to users. CRMOs, so it was argued, reduced transaction costs (adapted from Handke and Towse, 2007) by reducing search and information costs, bargaining and decision costs, enforcement costs and adjustment costs. For that reason the legal monopoly of CRMOs came to be seen by many scholars as rather a natural monopoly (Merges, 1996; Balogh, 2010; Aggarwal and Walden, 2009).

2.1. **A Closer Look at the Work of CRMOs from a Transaction Costs Point of View.** CRMOs bear the potential to both reduce transaction costs and increase the volume of transactions. They thus increase the income of artists and decrease costs associated with rights clearance to licensees at the national level. These various transaction costs have a significant impact on the economic efficiency of collective rights management. Their existence has over decades overshadowed the institutional architecture of copyright royalty collection systems in Europe.

CRMOs traditionally mitigate search and information costs. These costs arise when seeking to identify a potential contracting partner. Identifying a contracting partner and processing

information about them is time consuming and costly. By creating a central contact and information point to channel licenses and clarify rights clearance, CRMOs reduce these costs significantly. This helps to detect illegitimate use, while at the same time identifying licensing opportunities. The search and information costs to users of soliciting multiple rightsholders for rights clearance (especially if ownership is unknown or complex) is reduced through one single central point of contact.

Furthermore, bargaining and decision costs are reduced because licensors and licensees need only to deal with the intermediary. Because uniform conditions are conferred by an accredited body, bargaining and decision costs are further reduced. The time and effort cost associated with licensing arrangements is strongly controlled because of the use of established contractual terms and tariffs. Enforcement costs, which are associated with contract compliance, are reduced because the CRMOs record usage and manage the handling of payment by collecting and redistributing royalties. Adjustment costs, which can occur when a contract needs to be unexpectedly reviewed (Cooter and Ulen, 2007), are also reduced. A CRMO acts as a 'one stop shop' and facilitates conclusions, negotiations and licensing contracts.

2.2. **And then came the Internet.** However, the invention of the Internet, the process of European integration and its accompanying aim for a Single Market, significantly challenge the existing institutional arrangements. Transaction costs associated with license agreements increase with every organization involved. In addition, a multitude of different fee structures and restrictions apply to each individual CRMO repertoire as well. That the complexity and cost of digital music licenses multiplies in a fragmented European digital music market comes as no surprise. Multi-territorial licensing requires the cross-border administration of two services: 1) the granting of licenses to commercial users; 2) the distribution of royalties to rightsholders (Ghafele & Gibert, 2011). Guibault and Gompel argue that these two services currently 'do not function in an optimal manner and hamper development of innovative markets for the provision of online music services' (Guibault and Gompel, 2006). This has

been recognized by the Directive "on collective management of copyright related rights and multi-territorial licensing of rights in musical works for online uses in the internal market" ("the Directive"), which was approved by the European Parliament in February 2014.

2.3. **The E.U. Regulatory Context.** Against this economic reality, the argument for a cross-European licensing arrangement seems convincing. The aspiration of a Single Market and the borderless world of the Internet stand in strong contrast to a Westphalian state order as reflected in the Berne Convention. The political, economic and technological shifts present considerable challenges to the existing system. How and to what extent to adapt the system remains a challenge for European Union policy makers.

In 2001 the European Commission was notified of the Santiago Agreement, an arrangement originally of five CRMOs, which sought to adapt the traditional framework by offering cross border digital licenses to users based in participating countries. The Agreement was subsequently joined by other CRMOs, except for the Portuguese CRMO, and was thought of an important step to overcome the fragmentation of licensing arrangements in the E.U. The European Commission however raised concerns about antitrust issues and reminded CRMOs that consumers would be restricted in their freedom of choice and in 2008 the European Commission decided the cross-licensing arrangements were a violation of competition law.

Since then, the position of the European Commission seems somewhat torn between the need to establish a single market and the recognition of the principle of subsidiarity. The E.C. recognizes that "the creation of attractive online content and services and its free circulation inside the EU and across its borders are fundamental to stimulate the virtuous cycle of demand" (European Commission, 2010), but how to translate this fully into market practice remains yet to be explored. The E.U.'s 2014 adoption of a new directive on collective management of copyright and multi-territorial licensing of online music is an important step towards a better framework of online music royalty capture. The new Directive fosters transparency and harmonizes to a certain extent standards for multi-territorial licenses from single providers

and also allows artists to move their rights to another CRMO. The Directive does relatively little to promote a genuine licensing scheme that reflects in full the economic features of music copyright in the digital era. To what extent increased competition among CRMOs will furthermore help to overcome the fragmentation of musical repertoires remains also to be seen. Since CRMOs aim to reduce transaction costs, the fragmentation of repertoires on the supply side must be prevented in favour of the commercial users who generate demand. This is a difficult balance that must be achieved to render the collective rights management of digital music more efficient.

Most recently, market participants themselves have sought to take action. The search engine Google established jointly with a range of CRMOs; among them French SACEM, Spanish SGAE, Italian SIAE, and Portuguese SPA; and other players like Universal Music Publishing International, SONY Latino and Peer Latino a European wide platform for music licenses. 'Armonia' acts as virtual 'one stop shop' and allows for the licensing of a tremendously huge music repertoire in over thirty five countries. It is still too early to tell if this model will succeed.

2.4. **The Internet Impacts Transaction Costs in Many Ways.** The Internet redefines to a large extent the role of CRMOs in mitigating transaction costs. On the one hand, registration costs and the use of copyrighted music are significantly reduced. Royalty distribution systems are simplified by introducing automated services. Complex ownership structures prevailing in multimedia works like films are not a hurdle to innovation as rights could be cleared quickly through an automated system to the extent that technical protection measures and right clearance mechanisms are effective.[1] On the other hand, the Internet opens up a host of new transaction costs not encountered before, as is explained in the paragraph below. Automated rights clearance only mitigates some of these search and information costs by automatically registering and blocking illegal uses of works. While there are multiple issues

[1]It is not within the scope of this paper to discuss this subject in further depth.

associated with the automated clearance of rights, epitomized by the battle over digital rights management technology, this is too broad of an issue to go into detail here (Ghafele & Gibert, 2011).

2.5. **The Role of CRMOs in mitigating transaction costs on the Internet.** Bargaining and decision costs can be reduced online as the need for geographical proximity between CRMOs and users of musical works decreases. If works are registered into a single database, a single point of access for users and rightsholders renders the system more efficient. This benefit is mitigated if rightsholders all separately monitor and enforce their rights with separate automated systems. However, digital technologies do not reduce the potential for opportunistic behavior among users and rightsholders with differentiated bargaining power.

The individual registration of musical works using automated rights clearance enables the automatic monitoring and invoicing of uses where the payment mirrors precisely the intensity of use and thus reduces enforcement costs. Rather than depending on costly litigation to retroactively punish illegal use, automated rights clearance pre-emptively prohibits illegitimate use by blocking content. By consequence, adjustment costs can also be reduced as automated rights clearance technologies can be fine-tuned according to new use parameters.

Search and transaction costs can remain however prohibitively high because the internet allows users to copy and distribute vast amounts of music at a very low price. Detecting and inhibiting such illicit use can be exceptionally expensive and, at times, close to impossible (Ghafele & Gibert, 2011).

While some bargaining and decision costs continue in the digital environment, the relative cost of other collective administration procedures is reduced. This includes search and information, enforcement and adjustment transaction costs in collective rights management online. Cross-border licensing is deemed significantly more efficient under an automated system that could identify and clear rights instantaneously across multiple jurisdictions (Maloney, 2007; Day, 2010). Again, this requires that works continue to be registered in central databases

in order to capitalize on the cost reductions while retaining large enough repertoires to be attractive to commercial users. This is the rationale behind recent initiatives like the Global Rights Database, a partnership between major music publishers, CRMOs, and distributors to facilitate cross-border rights clearance. The importance of a centralized point of access underlines the detrimental influence of repertoire fragmentation when managing cross-border license arrangements (Ghafele & Gibert, 2011).

For reasons like these, Rochelandet has argued that CRMOs continue to exhibit benefits in a digital world. These include: 1) minimising entry points to repertoires while offering complete legal certainty to users; 2) non-discriminatory and non-exclusive license grants that enable less popular repertoires to access the market; and 3) the accurate distribution of receipts through fine-tuned digital management (Rochelandet, 2003). He concludes that CRMOs are private institutions that enable effective governance of transactions when there are multiple economic partners and large informational asymmetries (Rochelandet, 2003). These benefits may hold true in isolated national systems. However, the reality of clearing multiple rights across various organizations in multiple territories with different regulations today undermines CRMOs as an effective governance framework for digital music (Ghafele& Gibert, 2011).

3. Balancing Competition and Repertoire Fragmentation

3.1. **National Monopolies and Administrative Efficiency.** The lack of competition between CRMOs may have effects on administrative efficiency (Day, 2010; Balogh, 2010; Conley, 2008; Katz, 2005). Commentators frequently remark how the administrative bureaucracy of CRMOs creates costs that would not occur if technologies were adopted by artists themselves (Day, 2010; Balogh, 2010; Conley, 2008; Katz, 2005). This issue is reflected in the 2014 E.U. Directive as the contractual restriction of rightsholders to a single CRMO is lifted in the context of the Internet only. Thus, theoretically they should be provided now with the ability to choose the most cost-effective administration of their rights. Members should, in the foreseeable future, also be able to directly compare the results of different organizations.

However, a high degree of information asymmetry exists about the processes on which these decisions could be based. This is justified because insulation from competition results in no market pressure exerted on CRMOs to become more efficient. There is an opportunity cost for greater distribution, since CRMOs often refuse licenses to commercial users situated outside of their given territory. However, increased competition amongst CRMOs regarding the EU-wide clearance of rights also risks fragmenting musical repertoires (Gervais and Maurushat, 2003).

3.2. **Causes and Effects of Repertoire Fragmentation.** Repertoire fragmentation results from competition amongst CRMOs due to two interrelated interests that must be juggled in collective rights management: those of commercial users and those of rightsholders (Riis, 2011). For rightsholders, high quality of service implies that licensing yields the highest possible return on their copyrighted works, while retaining low administration costs in the monitoring and enforcement of these works. For commercial users the quality of service relies on the size of the repertoire and the cost of the license. The issue is that users such as a digital music service will seek the lowest license price with the largest possible repertoire.

Since the price determines the amount of royalties allocated for distribution to rightsholders, rightsholders who can choose amongst various CRMOs may feel they are getting insufficient payment for their work. If these members withdraw their rights, the repertoire shrinks and the license becomes less valuable. This reduces a commercial user's willingness to pay and thus these two levels of competition complicate the collective rights management landscape (Riis, 2011).

If a high degree of repertoire fragmentation exists, most commercial users will not license small, specialized repertoires. This is because these are only needed in niche markets and most copyright users can supply attractive services without them. In an efficient market, the aggregation of smaller repertoires with publishers or societies overcomes this problem. This tension exhibits the trade-off between the efficiency gains, which result from competition at the

level of rightsholders, and the negative impact of repertoire fragmentation. Since collective rights management aims to reduce transaction costs, the fragmentation of repertoires on the supply side must be prevented in favor of the commercial users who generate demand (Riis, 2011). This is a difficult balance that must be achieved to render the collective rights management of digital music more efficient. The 2014 Directive recognizes these tensions by seeking to lay down common rules and standards for multi-territorial licensing. Again, to what extent this will work in practice remains to be seen. (European Commission, 2014)

4. Methodology

4.1. **Background.** Are member countries of the European Union currently capitalizing on the royalty revenue opportunities of the continuously growing market for digital music services? To answer that question this study estimates the size of the 2012 digital music royalty market and compares it to the revenues made by CRMOs from online sources in that same year. While there may be multiple reasons for the disparity between potential and actual royalty revenue from digital music, it is reasonable to assume that any major difference is to a certain extent related to the current collective rights management system. Digital piracy is certainly significant, but it may be just as much a symptom of the current system as it is a cause of its current challenges. Without cost-effective and convenient legal alternatives to access digital music, illegal downloading is sure to persist (BIS, 2009).

It is not within the scope of this study to analyze the cause or impact of digital piracy. Substantial academic attention has already been paid to its nature, scope and impact (Cenite et al., 2009; Kretschmer, Klimis, and Wallis, 2001; Marshall, 2004; Smiers, 2000; Yar, 2005). The contribution of this study to the literature is to quantitatively estimate the value of the European digital music copyright market in order to compare it against revenues extracted from online sources by CRMOs. From this, conclusions can be drawn on the degree of effectiveness of the current system for extracting value from digital music markets. This is done by using a combination of three methods. First, the size of the digital music royalty market

in Europe is approximated. Then the estimated market value is compared with 2012 revenues. Finally, the royalty distribution efficiency ratio of CRMOs is calculated. These three calculations enable this study to model the current context of collective rights management of digital music copyright in ten different European countries.

4.2. **Estimating the Size of the Digital Music Royalty Market.** In this section royalty fees rather than retail prices are used as the baseline of the calculations. Therefore, the total royalty market for digital music services is the economic value of the market to digital music providers based on the fee structure provided by CRMOs. This figure estimates the potential revenue for CRMOs, not for music service providers, who collect a higher amount than what is usually charged by CRMOs. This has been a conscious choice as it allows the valuation to lean to the conservative side as the market is seized at the lowest 'pay as you go' rates provided by CRMOs for non-commercial usage and for websites with either very limited views or hardly any turnover.[2] A benchmark individual expenditure estimate based on what CRMOs charge is lower than the expenditure of active users of digital music services (considering that Apple iTunes – the largest single digital retailer – sells a single track for $0.99). A lower estimate helps compensate for those currently accessing content without paying for it. Thus, this study does not value the market at what could be the optimal pricing level from a welfare enhancing perspective or at the rates charged by intermediaries. These are distinct questions that would deserve further study in a separate analytical piece.

4.3. **Estimating Annual Digital Music Consumption.** The number of digital music consumers is estimated with reference to Eurostat data associated with the E.U.'s information society. Eurostat collects data on the percentage of individuals aged 15-65^{+}[3] using the Internet

[2]Except for the three CRMOs that only offer a packaged service offering. Fees were taken from the websites listed in Appendix 1.

[3]The age range 15-65^{+} years reflects the way EUROSTAT collects its data. It means the population between the age of fifteen and sixty five years or older.

for accessing digital content.[4] The statistics on the percentage of the population using the Internet to access digital content is a lump sum indicator that does not differentiate between the downloading of music, images or the playing of games. However, those individuals that have sufficient bandwidth and digital literacy to download/stream/buy films are likely to also be consumers of digital music. The consumption of music via digital channels is more prevalent than the consumption of films, and is likely to make up a large proportion of this percentage. Moreover, the content access data is the percentage of individuals accessing content within a population age range of 15-65$^+$ and the total population data is applied for the same age group. This suggests the number of people accessing content online may be slightly higher than this figure implies.

With reference to the Oxford Internet Institute's U.K., it is assumed that sixty three percent of such downloads pertain to music (Dutton & Blank, 2012). This assumption cannot be further substantiated because of a lack of granular survey data on digital consumption patterns throughout the European Union. The amount of digital music consumption needs therefore to be understood as an estimate that can only offer an order of magnitude of the phenomenon rather than exact numbers.

Using MU to denote the number of digital music users, S to denote the total population aged 15-65$^+$, and I to denote the percentage of the population using Internet for consumption of digital music, we have $MU = S \times I$.

4.4. **General Tariff Principles.** The fact that a fee is due no matter what the music is used for informs this paper's methodology and substantiates the approach of using CRMOs fee structures as a means to estimate market size. In spite of operating in different jurisdictions, all CRMOs demand a fee for the consumption of digital music, no matter whether the usage is of commercial or non-commercial nature.[5] That can be explained by the fact that music

[4]The data is from Eurostat Information Society Statistics. See the following websites; http://epp.eurostat.ec.europa.eu and http://appsso.eurostat.ec.europa.eu

[5]Email exchange with legal counsel of CRMOs.

consumption is subject to copyright law, except if the user can claim that the usage constitutes an exception to copyright law.

The tariff principles of CRMOs vary largely across the ten different E.U. member countries analyzed here. Not only do the fees differ hugely, but also the rationale and approach to tariffs varies significantly. That is partially because some CRMOs are situated in common law countries (like British PRS for Music) and others follow civil law (like Austria's AKM or Germany's GEMA) and partially because of a lack of harmonization of the European internal market.

All CRMOs provide an overview of their fee structure on their websites, but to double check fees an email was sent to CRMOs legal counsel asking; 1) whether an end user would have to pay a fee if the usage was of non-commercial nature, and 2) how much a user would have to pay for streaming a maximum of 80,000 songs in a year and downloading a maximum of 4,300 songs in that same year. All CRMOs offered a swift reply from qualified experts in the field.

Interestingly, the email exchange suggests that with the exception of two CRMOs, their in house counsel felt that the CRMO offered both tariffs and means to collect such fees. Czech OSA's counsel for example explained that the royalties due will vary according to the nature of the project, but if "all tracks are made available for free to the public, then, a fixed per track rate will apply." Equally, PRS for Music, replied that the type of licensing fee would depend on the nature of the project, but that "if it was for regular streaming or downloading music for private usage, then they could offer an end user a blanket license, which gives permission to use the music of PRS for Music's repertoire in one's own CD's, DVD's and other formats." The reply from Finnish TEOSTO was very much in line with the information received from PRS for Music and OSA, stating only that non-commercial usage might have a different rate from commercial usage. This information was reflected in the study. The same was also confirmed by legal counsel of Austrian AKM, who stated that "a consumer needs to pay for

streaming or downloading music, no matter what (s)he wants the music for." German GEMA offers a tariff tailored to private websites and in doing so, underlines the argument made by their counterparts of all the other CRMOs. Danish KODA also confirmed that a fee was due no matter what the nature of the usage was. It also confirmed its tariffs and legal counsel stated that the (rather high) fees were due, no matter whether the usage was of commercial or non-commercial nature.

Only Belgium SABAM, which offered a choice between its own fee structure and the fee of intermediaries and Swedish STIM referred an end user "to contact digital music services directly regarding price lists." Yet, at the same time, STIM's own tariffs for limited music usage were provided. These emails are interesting in and of themselves because they show that the digital music market in Europe is still at a very early stage. Clearly, further research would be justified to study how the expansion of intermediaries in digital music markets could enhance market capture. Table 1 below discloses which tariffs were used in each country and to which respective economic criteria they corresponded. Intermediaries like Spotify or iTunes certainly charge a premium over the fee that CRMOs ask for or their gain from advertisement revenues exceeds the fee that the CRMO asks for. This study's estimate may be thus a conservative one.

The tariffs in this sample vary with regard to how prices are established. Some CRMOs only offer a packaged price, others only a pay as you go rate. Most CRMOs ask, however, for a percentage rate of the annual turnover generated while using its music repertoire. What is interesting is that the fees are not at all aligned across the E.U. Danish KODA is by far the most expensive, followed by Sweden and the Netherlands. The fees of the Czech Republic's OSA are quite high as well. When compared to the disposable income of Czechs, a use of 76,000 streams and 2,255 downloads of music would constitute over 3% of their annual net income. The high fees of CRMOs have recently caught the attention of the Court of Justice of the European Union (CJEU), which warned CRMOs not to overprice usage of

their repertoire.[6] An optimization of tariffs would deserve a separate study. In particular it would be worthwhile investigating where the optimal level of pricing would be from a welfare enhancing's point of view, and by what percentage current fee structures deviate from that. It would also be interesting to investigate further to what extent the fees CRMOs charge discourage consumers to pay for music online.

On demand music downloading and streaming online only constitutes a part of the fees that are due when consuming music online. It must be noted that each of these packages contain not only music, but also film and ringtones. Due to a lack of comparable data, film and ringtones are however ignored in this study. In all but three cases that only allow for a package deal, the 'per unit' fee was used and the streaming or downloading of albums was continuously ignored. CRMOs may offer discounts upon negotiation, but that is ignored in this study as well. Appendix 2 provides an overview of the tariff structure of the ten CRMOs used in this study.

4.5. **Estimating The Annual Amount of Music being Streamed and Downloaded.** Three CRMOs offer packaged prices. Swedish STIM, British PRS for Music and Dutch BUMA/STEMRA. In each of these three cases, the smallest and cheapest package was selected (see Table 1 below). The annual consumption for streaming and downloading music is determined by averaging the amounts for streaming and downloading music offered under each of the three packages. This results in 76,333 streams and 4,333 downloads of music within a year. Interestingly, the costs for these three distinct packages vary and that cannot be explained by differentials in consumers' income as in Belgium and the UK the average income was about 20,000 Euro in 2012 and in Sweden it was about 26,000 Euro. Rather, it seems that different CRMOs chose to price the market differently.

[6]See http://www.managingip.com/Article/3313793/Copyright-European-Union-Jurisdiction-Archive/High-collecting-society-fees-may-be-an-abuse-says-CJEU.html

Table 1: Price Structure BUMA/STEMRA, STIM & PRS for MUSIC

CRMO	Music Streaming	Music Download	Type of Package	Cost in Euro
STIM	144,000	2,400	Basic License for up to 5000 visitors/month	463
BUMA/STEM	40,000	2,166	Scale 1 small scale use of turnover of < 6 000 Euro	260
PRS for Mus	45,000	2,200	Tariff 'A' small scale use for turnover of < 12 000 £	153
Average	76,333	2,255		

Source: see footnote 3

The table in Appendix 2 provides the distinct fees that the respective CRMOs would charge for such a usage. AKM, SABAM, SACEM, OSA, KODA and TEOSTO offer a 'pay as you go' fee for each stream or each download. These minimum rates were used to determine the fee for the above mentioned usage for non-commercial purposes. GEMA asks a fee of 37.4 Euro for streaming music on a private website, which is a strongly reduced fee and STIM, PRS for Music and BUMA/STEMRA charge the above discussed packages. After adding VAT tax, which in most cases is heavily reduced for CRMOs, a price can be determined that can then be associated with the above discussed demand for digital music.

The total digital music royalty market is then calculated by multiplying the number of digital music users with the estimate of yearly usage and the cost estimate for yearly consumption of music. The latter is derived from CRMO's 2012 fee structures, which are adjusted by historical exchange rates.[7] On the basis of the fees and the number of consumers, it is then possible to make an estimate of the 2012 digital royalty market for music. This study thus sizes the market at 2012 fee structures provided by CRMOs. In doing so, it chose systematically the lowest rates.

Denoting by DRM the size of the digital royalty market, and by F the estimate of fees by each CRMO for the estimated average annual usage, and recalling our definition of digital music users (MU), we have $DRM = MU \times F$.

The actual value of royalties collected from online sources can now be compared to the potential royalty market for digital music in each country. This gives an indication of the lost market opportunity. The percentage of the market captured by each CRMO in the ten different European countries is then calculated.

[7] http://www.xe.com

4.6. **Limitations associated with these Estimates.** On the one hand, this approach provides a conservative assessment of missed opportunities in online music services. This estimate is based on population data and content access data from 2012. As broadband penetration and population increases, the number of individuals accessing content online is likely to increase. This will expand the potential market for digital music services. The estimate does not account for the increasing number of individuals that access content in Europe through their mobile phone using 3G and 4G networks. The total market may well be higher than estimated.

The figure of the total market is likely to be higher than 2012 actual revenues because it is based on the number of people *accessing* content, not necessarily *purchasing* content. Key organizations in the music industry continuously remark on the negative impact of digital piracy on music sales. While this impact is without a doubt substantial, this is an estimate of potential revenue in digital music services as if most of digital music consumption were monetized. As digital music services become more widespread, convenient and accessible to European consumers, the impact of piracy on revenue from digital distribution channels should decrease. Accordingly, it is reasonable to estimate the potential digital music market using data about content access online.

The figure for the actual revenue from online sources is compiled from the 2012 Annual Reports of the CRMOs. This is frequently grouped under the heading 'Online Revenues' which accounts for several different media. These include digital download services, subscription services, mobile music, and Internet radio music licenses. The amount of royalty revenue collected from online music (excluding mobile-related revenues) is thus likely to be slightly less than this figure indicates, meaning that this study understates rather than overstates the market size.

However, on the other hand there is an implicit assumption in the calculations that the demand for online music downloads has zero price elasticity, which leads to the results being

to a certain degree overstated. It must however be noted that it is impossible to estimate with any degree of reliability what the true elasticity of demand is. It is likely that the demand for digital music products is downward sloping, and if consumers were charged, the downloading of music would presumably decrease.

This paper does not offer an estimate on how much royalties are paid through private ordering arrangements. This is a distinct research question and would deserve analysis in the context of another study. The sole focus of this paper remains the effectiveness of CRMOs on both online and offline markets.

4.7. **Assessing CRMO Efficiency against Market Estimates.** While the above mentioned indicators help to get a grasp of how well online markets for music are captured, the methodology below offers insights on the effectiveness with which CRMOs distribute the revenues they currently collect, however high these may be. Rochelandet (2003) originally assessed the efficiency of distribution activities. With reference to his work, a model is run with updated 2012 data, in order to make a statement on how well CRMOs succeed in distributing revenues to their members. Current CRMO licensing revenues from online sources are based on Annual Reports of CRMOs (2012). The existing efficiency of distribution activity is measured as the gross proportion of distributed revenues (GDR) over 2012 in comparison to effectively collected sums. If one defines the total copyrights collected from users as (P), the total revenue distributed to members as (R), and the amount dedicated to cultural and social funds (C), then the following formula can be applied:

$$GDR = R/P$$

This yields however a problem with measurement. Before being distributed part of collections are allocated to social/cultural actions, such as subsidies to festivals or pension funds. We thus subtract these from the gross distribution sum. Net distribution ratio (NDR) takes

into account various funds:

$$NDR = (R + C)/P$$

The methodology is limited to the extent that there is a more dynamic element to the royalty collection and distribution process that cannot be captured by this ratio. This is essentially because a small proportion of royalties collected in one fiscal year often roll over and is distributed the following fiscal year. However, this is partially mitigated by the fact that some royalties collected in a given year are allocated for distribution in the following year, thus offsetting the impact of royalties collected in a given year that are allocated for distribution in the following year.

There are also other considerations to take into account regarding the nature of the data presented in the Annual Reports. In assessing CRMO copyright royalty revenue, the impact of operating revenue from other sources and investment depreciation should be excluded. Wherever possible, the figure for the royalties actually distributed has been used. Furthermore, the impact of income from abroad may skew the distribution ratio because the national CRMO does not incur the administration costs for these revenues. However, this is offset by the fact that they also collected royalties for other CRMOs; thus incurring administration costs for royalties that are not distributed to their members.

5. Empirical Analysis of the Digital Music Royalty Estimates

The results of the research show there is a very large market potential for digital music in European markets. It is estimated that the total royalty market in the ten different E.U. countries analyzed was over €18 billion. As broadband penetration increases and competition amongst Internet Service Providers (ISPs) in Europe enhances access to the Internet, this market will grow rapidly. The three largest digital music markets (France, Germany and the U.K.) make up around €11 billion in royalties. Maybe because Great Britain's PRS for Music

charges the lowest fees, it enjoys the biggest existing online royalty market across the sample studied here.

Naturally, if there is no revenue generated from digital music consumption, there can be no royalty payments. European consumers may lack sufficient access to legitimate and convenient digital music services. The lack of sufficient access to legitimate digital music services and the impact of digital piracy are responsible for a proportion of the gap between actual and potential revenue.

The following table presents the estimate for the E.U.-wide royalty market for digital music.

Table 2: 2012, Royalty Market for Digital Music in Ten Different E.U. Countries

Country	CRMO	Internet Users bw. 15-65+	% of inds downldg/strean	No. of inds downldg	Downldg./Streaming Music
Austria	AKM/AustroMechana	5,244,311	32	1,678,179	1,057,253
Belgium	SABAM	7,182,950	51	3,663,304	2,307,882
Czech Rep.	OSA	4,720,799	25	1,180,200	743,526
Denmark	KODA	4,226,533	53	2,240,063	1,411,239
Germany	GEMA	60,359,907	40	24,143,963	15,210,697
France	SACEM	43,082,847	33	14,217,340	8,956,924
Finland	TEOSTO	3,609,828	58	2,093,700	1,319,031
Netherlands	BUMA/STEMRA	13,003,668	55	7,152,017	4,505,771
Sweden	STIM	7,266,698	56	4,069,351	2,563,691
U.K.	PRS for Music	45,527,377	43	19,576,772	12,333,366

6. Comparing Estimated Digital Music Royalty Markets with Actual Market Capture

Comparing the estimated royalty market value with current revenues that CRMOs extract from online sources demonstrates how efficiently digital music is monetized. The U.K. CRMO 'PRS for Music' was certainly the most successful one with online revenues of over €51 million and a market capture of 1.15%. Most other CRMOs capture between 0.16% (Austria, Czech Republic and the Netherlands) and 0.87% (France). More importantly, the average across ten European markets included in the study was a royalty market capture percentage of 0.49 %. This suggests either that digital music services in Europe are not generating sufficient royalties for CRMOs or that CRMOs are inefficient in capturing royalty payments from online sources. A combination of both is likely to be inhibiting the growth of digital music. Current multi-territorial licensing practices in Europe are stifling the expansion of legitimate music services,

which in turn leads to the inability by CRMOs to capture a larger percentage of the potential market. The disparity between potential and actual revenue for all of the European markets suggests there are problems with the current collective rights management system.

Table 3: 2012, Comparing Royalty Market Potential with Actual Online Revenues

Country	CRMO	Fee Downldg./Strea	Potential Royalty Ma	Existing Royalty Ma	Lost Royalty Mar	Market Captur
Austria	AKM/AustroMe	€ 327	€ 345,721,731	€ 562,000	€ 345,159,731	0.16
Belgium	SABAM	€ 248	€ 572,354,679	€ 1,550,000	€ 570,804,679	0.27
Denmark	KODA	€ 1,532	€ 2,162,018,897	€ 6,178,000	€ 2,155,840,897	0.29
Germany	GEMA	€ 262	€ 3,985,202,483	€ 22,298,000	€ 3,962,904,483	0.56
France	SACEM	€ 263	€ 2,355,670,983	€ 20,500,000	€ 2,335,170,983	0.87
Finland	TEOSTO	€ 540	€ 712,276,822	€ 4,200,000	€ 708,076,822	0.59
Netherlands	BUMA/STEMR	€ 551	€ 2,483,580,889	€ 3,885,000	€ 2,479,695,889	0.16
Sweden	STIM	€ 579	€ 1,483,749,057	€ 5,650,000	€ 1,478,099,057	0.38
United Kingdom	PRS for Music	€ 366	€ 4,514,012,079	€ 51,700,000	€ 4,462,312,079	1.15

7. Lost Income for Musicians

The evidence suggests there is an important market opportunity in digital music services that is not being capitalized upon. The result is a substantial loss of income to musicians from European markets. Across the ten markets that were studied, it is estimated that artists lose €18 billion. In the U.K. this amounts to €4.4 billion that are being left on the table, in Germany to €3.9 billion and in France to €2.3 billion. It may be that CRMOs are unable to extract revenue from online sources because current consumption of digital music is not effectively monetized. While that may reflect the impact of digital piracy, there is very likely a significant opportunity for intermediaries to expand their role in collecting this lost revenue.

Yet, the size of the difference between estimated potential revenues and current revenues suggests something else may be inhibiting the capture of revenue from online sources. Interestingly, the net royalty distribution ratio across the ten markets analyzed in greater detail accounts for 85% (see Table 4 below). The challenge lies thus in the market capture in digital environments and not in improving the net distribution ratio of whatever is captured by CRMOs. This seems to suggest that CRMO's do not suffer from significant administrative burdens, but a multitude of factors restrict the capture of the digital music market in the

E.U. These include a dire need to further adapt the regulatory framework, more awareness-raising on copyright regulation among consumers and the further promotion of intermediaries to facilitate market access. Very likely these factors will also require CRMOs to adapt their business model for digital music.

Table 4: 2012, Estimate - Royalty Distribution Efficiency[8]

Country	France	U.K.	Germany	Austria	Denmark	Belgium	Finland	Netherlands	Sweden	Czech Republic
CRMO	SACEM	PRS for Music	GEMA	AKM	KODA	SABAM	TEOSTO	BUMA/STEMRA	STIM	OSA
Total copyrights collected from users **P** (million Euro)	802.6	745.49	820.5	93.517	95.06	146.17	46.25	178.6	172.322	33.948
Total revenue distributed to members **R** (million Euro)	662.8	664.76	692.3	85.599	80.727	98.3	40.04	159.477	147.212	19.359
Total licensing & administration expenses **C** (million Euro)	139.8	86.07	128.2	13.852	9.368	35.267	10.189	26.38	9.094	5.926
Member size **M**	145000	97000	67266	19786	39000	38171	27000	21937	71291	7720
Amount dedicated to cultural & social funds **F** (million Euro)	19.3	1.74	46.812	0.623	8.494	0.9846	2.679	9.883	4.687	0.28
Online Revenues **O** (million Euro)	20.5	51.7	22.298**	0.562	6.178	1.55	4.2	3.885	5.65	0.34
Gross Distribution Ratio **GDR** (percentage)	82.58%	89.17%	84.38%	91.53%	84.92%	67.25%	86.57%	89.29%	85.43%	57.03%
Net Distribution Ratio **NDR** (percentage)	84.99%	89.40%	90.08%	92.20%	93.86%	67.92%	92.37%	94.83%	88.15%	57.85%
Collected Sums per Member **PPM** (in euro millions)	0.00553	0.00768	0.01219	0.0047	0.00243	0.0038	0.00171	0.00814	0.00242	0.0044
Distributable Sums per Member **RPM** (in euro millions)	0.004571	0.00685	0.01029	0.0043	0.00206992	0.0026	0.00148	0.007269773	0.0021	0.0025

The growth of legal digital music services has been substantial over the past few years. However, they are often constrained to working in specific markets due to the cost and complexity of licensing arrangements. It seems that it is the inefficiency of the current system based on national jurisdictions that may be stifling further growth in this sector, contradicting some of the central tenets of the European Union to promote competition, free trade as well as a single market for Europe.

8. Conclusion

The Internet is a disruptive technology. It has fundamentally changed the way music is being consumed, and corresponding business and governance structures are yet to be identified.

[8]Source: Annual Reports. Gema Online Revenues are 2011 figures as 2012 was not available. France (administrative expenses) and Czech Republic (online revenues) are internal estimates.

This study underlines the point. While piracy certainly plays an important role in helping to understand the existing situation, there are significant institutional shortcomings in how Europe is dealing with the royalty collection of digital music. While the Internet mitigates some of the transaction costs associated with the collection of licensing revenues, it also gives way to a range of other transaction costs that are not encountered in off-line environments. The Adoption by European Parliament in February 2014 of a new Directive on collective management of copyright and multi-territorial licensing of online music seeks to overcome some of the tensions that prevail between a globalizing economy driven by high-speed information and communication technology and institutions that emerged to a large extent out of a 19th century nation state rationale. However, the Directive leaves important issues untouched. The national monopoly of CRMOs is not abolished. The preservation of national monopolies seems, however, questionable in light of European Union integration. To pool music copyright through CRMOs has traditionally helped to mitigate transaction costs because of the leverage of economies of scale and scope. The issuance of blanket licenses provided a helpful tool for revenue collection. However, to what extent these traditional approaches still work to monetize new consumption patterns is questionable.

The persistent call for greater competition amongst CRMOs in relation to administrative fees and the pan-European clearance of rights acknowledges there is indeed a problem. This is an important step, but any solution must be wary of the problems posed by changing digital music consumption patterns as well as the resulting high transaction costs. It must also recognize that, while digital technologies render many facets of collective rights management more efficient, a centralized point of access for all types of users to clear multiple rights simultaneously is essential. Otherwise, the search, information, bargaining and decision costs associated with these transactions will remain prohibitively high.

Beyond the 2014 Directive, there will be need for further reform of current nation-based systems of digital music management. The ability to easily license rights across borders in the

European Union is likely to foster an explosion in legal digital music services as innovators benefit from a transaction cost-effective legal framework. The creation of a single channel for the clearance of a large repertoire of rights is considerably more beneficial to users than the existence of a multitude of different organizations each representing a share of artists. Though rightsholders may be able to use automated systems of rights clearance to monitor and license their rights more effectively in a number of cases, commercial users (such as digital music services) still benefit greatly from the centralized point of access provided by a CRMO. If any collective rights management system is to work for digital music, it requires a centralized transnational database of musical works that overcomes some of the problems associated with fragmented repertoires. This should help unlock the potential of digital music markets, consolidate the single European market, increase competition in the administration of collective rights, and provide better services to European consumers.

New business models are needed, alongside enhanced governance structures and the promotion of intermediaries, so as to capitalize on the market for digital music services in light of increasing broadband penetration and changing consumer patterns in Europe. Digital technologies can reduce the costs of registration and use of musical works. They can also simplify royalty distribution processes by introducing automated services. The complexity of ownership in many multimedia works is facilitated by the automatic identification of relevant rightsholders in an automated rights clearance system. This assumes that automated systems are effective in their administration of rights as well as able to balance the interests of the multiple parties involved. If the impact of digital piracy on industry revenue is to be mitigated, convenient and cost-effective access to legal music services, alongside enhanced awareness among consumers are vital steps so to revitalize the music industry in Europe by adapting to the changing needs of consumers.

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APPENDIX 1: *Websites used for gathering data on fees.*

Except for the three CRMOs that only offer a packaged service offering. Fees were taken from the following websites:

- http://www.akm.at/Musiknutzer/Online-Nutzung/Tarifinfo/;
- http://www.sabam.be/en/sabam/online;
- http://www.koda.dk/eng/music-users/music-on-the-internet/;
- http://www.teosto.fi/sites/default/files/files/P14_Download_2014.pdf;
- http://www.teosto.fi/en/teosto/articles/internet-and-mobile-pricelists;
- http://www.sacem.fr/cms/site/en/home/users/music-on-demand;
- http://www.sacem.fr/cms/site/en/home/users/video-on-demand;
- http://www.sacem.fr/cms/site/en/home/users/streaming/music-on-demand-streaming/sessionid=7AD99FA5C8482E743410;
- http://www.sacem.fr/cms/site/en/home/users/streaming/video-on-demand-streaming;
- https://www.gema.de/fileadmin/user_upload/Musiknutzer/Tarife/Tarife_ad/tarif_vr_w_i.pdf;
- http://www.stim.se/en/Users/Internet/;
- http://www.prsformusic.com/users/broadcastandonline/onlinemobile/Pages/default.aspx;
- http://www.prsformusic.com/users/broadcastandonline/onlinemobile/MusicServices/LOMLPlus/Pages/default.aspx;
- https://www.bumastemra.nl/wp-content/uploads/BUM352_Invulformulier_muziekgebruikers_invulbaar2.pdf

APPENDIX 2: *The tariff structure of the ten CRMOs used in this study.*

Music on Demand	On Demand Streaming of Music	On Demand Download of Music
AKM	0.0018/stream	0.076/song
	or	or
	12% of revenues	8% of revenues
		0.0298 > 31 songs
	min. 15/month	min. 15/month
SABAM	0.001/stream/user	0.07/song
Tariff for extended	or	or
use of Repertoire	8% of revenues	8% of revenues
because min. threshold	min. payment 1328.9/year	min. payment 75/quarter
is very low at 1 hour/year		
KODA	0.0141/stream	0.0663/song
	or	or
	12% of turnover	9.5% of turnover
	min. 76.64/month	min.229/month
TEOSTO	41.48/month for < 10 000 streams if individual user	0.07/download (same if 'for free')
	and < 20 minutes/month	or
	12% of turnover	9.5% of turnover
	min 0.5/month/per user	
SACEM	0.00107 if >46 videos & <30% music rep.	0.07/song
	or	or
	2.5% of price charged to user	9-12% of price charged to user
	%depends on deal volume	%depends on deal volume
	100/ month if access to excerpts	100/ month if access to excerpts
GEMA	37.4 private site of < 120000 tracks/year	0.092/song
	or	or
	10.25% of revenues	37.4 private site of max. 120000 tracks/year
	or	or
	106.9/10 000/started tracks/live stream	3.1% of revenues if < 25% of music rep.
STIM	package of 38.6/month if < 5 0000 visitors/month	included in package
	max. 12 000 stream/month	max. 200/month
PRS for Music	38.25/year	38.25/year
	max music stream 45 000/year	max.download 2 200/year
	76.25/year	76.25/year
	max. music streams 90 000/year	max. download 4 400/year
BUMA/STEMRA	130/year	130/year
	max. music streaming 40 000/year	max. 2 166/ year
	260/year	260/year
	max. music streaming 80 000/year	max. 4 333/ year
OSA	0.001125/song	0.072790698/song
	or if used commercially: 12 of music subscription	per download if < 4300 tracks & for non
	8% of music downloading	commercial purpose

Notes:

- SABAM: 2012/2013 fees were used and the Consumer Price Index adjusted 2014 fees were ignored.

- KODA offers to make a gathered offer on an infividual basis.
- TEOSTO: individual users/month was used & the usage 'for free' tariff was also used.
- SACEM: if more than 1 album of 15 songs is downloaded, then Sacem asks for an additional fee of 0.0435 per track. As this paper ignores albums, this can be ignored.
- STIM only offers two types of packages. The basic & the medium usage package, which differentiates according to how many visits a website has. Here the basic package with $<$ 5000 visits/month was taken.
- PRS for Music: the limited online music license for annual revenues of less than 12,000 UK Pounds was used. This offers an annual blanket license for online music usage or general entertainment content in the UK. For a multiterritorial E.U. wide licensing scheme, one needs to contact them directly.
- Bandwith 'B' was chosen, which is commensurate with a 'medium' usage of BUMA/ STEMA.
- BUMA/STEMRA small scale use for turnover of $<$ 6 000 Euro was used. The rate is a fixed amount that can't be negotiated. Scale 2 tariff, of a scale 1-3 was used.
- OSA: Source is e-mail exchange with OSA dated 7.4.2014, based on up to 80,000 music streams and up to 4,300 music downloads.

APPENDIX 3: *An alternative methodology*

Methodology

Another method to estimate the size of the digital music market is to assume that the total addressable market for digital music services is the economic value of the market to digital music providers based on consumer expenditure. This figure estimates the potential revenue for music service providers, not for CRMOs, which collect a smaller percentage for royalty distributions. The total number of digital music consumers can then be estimated using two variables: the total population and the percentage of population using the internet for the consumption of digital music.

Defining the number of digital music users by MU, the total population aged 15-65$^+$ by S, and the percentage of population using Internet for consumption of digital music by I, we have $MU = S \times I$.

The total addressable market is then calculated by multiplying the number of digital music users by an estimate of yearly expenditure on music, which was assumed to be around 15 Euro per month at the E.U. level; a figure which was adjusted by purchasing power parities and historical exchange rates of 2012. (Eurostat, Purchasing Power Parities & Currency Exchange Figures, Historical Data, 2014)

The proportion of revenues from total music expenditures captured by CRMO activities can then be calculated by multiplying the total market with the percentage of revenue collected by CRMOs as a royalty fee for members, which was assessed as 8% of the total addressable market for digital music. This figure gives the potential collection sum for CRMOs in a digital market that can be compared to their current revenues from online sources.

Concretely, using AC to denote annual consumer expenditure (adjusted by purchasing power parity and currency exchange rates), the size of the digial royalty market (DRM) is

$$DRM = MU \times AC \times 0.08$$

However, this method faces a serious difficulty as the monthly consumption rate of 15 Euro, even if adjusted by purchasing power parities and exchange rates, can't be substantiated with solid figures and is therefore rather arbitrary. As there is no solid data publicly available assessing how high the monthly consumption is, this figure is only very moderately informative. That is, if it had been assumed that the monthly expenditure was 5 Euros or 25 Euros, then a completely different figure for the market capture would appear. For that reason, the method provided in the main part of the paper is much more reliable as in this approach a key parameter of the assumptions can't be substantiated. The insight that this estimate however allows to generate is the ratio of how CRMOs perform against each other that is because the

ratios don't change, no matter how high one assumes annual consumer expenditure is across the E.U. In that regard, further survey data across the E.U. would be very beneficial.

Estimate of Market Capture based on an Assumption of Annual Consumption

Countries	Downldg./Streaming Music	Estimated Yearly Ex	Estimated Addressable	Estimated Royalty Market at 8 Percent	Existing Royalty Market	Market Capture in Percent
Austria	1,057,253	€ 197.18	€ 208,464,494	€ 16,677,159.55	€ 562,000	3.37
Belgium	2,307,882	€ 105.87	€ 244,346,545	€ 19,547,723.61	€ 1,550,000	7.93
Czech Rep.	743,526	€ 146.60	€ 108,997,908	€ 8,719,832.62	€ 340,000	3.90
Denmark	1,411,239	€ 88.73	€ 125,217,430	€ 10,017,394.41	€ 6,178,000	61.67
Germany	15,210,696	€ 148.22	€ 2,254,454,220	€ 180,356,337.62	€ 22,298,000	12.36
France	8,956,924	€ 123.87	€ 1,109,488,251	€ 88,759,060.07	€ 20,500,000	23.10
Finland	1,319,031	€ 220.50	€ 290,843,995	€ 23,267,519.57	€ 4,200,000	18.05
Netherlands	4,505,771	€ 236.34	€ 1,064,891,178	€ 85,191,294.23	€ 3,885,000	4.56
Sweden	2,563,691	€ 193.28	€ 495,501,555	€ 39,640,124.43	€ 5,650,000	14.25
U.K.	12,333,366	€ 207.40	€ 2,557,950,045	€ 204,636,003.60	€ 51,700,000	25.26

Interpretation of Findings based on Alternative Methods Used

Obviously, when expressing the digital royalty market capture on the basis of monthly consumer expenditure, CRMOs appear to perform much better, than when the market capture is expressed on the basis of their fee structures. According to this approach, the digital royalty market capture of CRMOs is much higher than when assessing the market through their own pricing structures. This could mean that CRMOs pricing structures need to be reformed and that they are simply overestimating how much they could generate in digital markets.

However, also this method suggests that either that digital music services in Europe are not generating sufficient royalties for CRMOs or that CRMOs are inefficient in capturing royalty payments from online sources. A combination of both is likely to be inhibiting the growth of digital music. The disparity between potential and actual revenue for all of the European markets suggests there are problems with the current collective rights management system.

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