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Rethinking royalties – Alternative payment systems on music streaming platforms

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Abstract

Music streaming changed the recorded music industry's business model from individual product sales to unlimited on-demand access subscriptions. The streaming platforms experienced strong growth during the 2010s and now drive most of the industry's revenue, up to 90% in the most mature markets. The payment system for rights holders has remained unchanged. Many industry stakeholders criticise the system's alleged unfairness, and artist organisations, independent labels and major labels all propose different ideas to 'fix' the music streaming payment system. The current 'Pro Rata' payment system pools all subscription fees, with each rights holder receiving a payment proportional to their share of the accumulated number of streams. The system does not look to align the individual users' payments with their actual musical preferences and consumption. Therefore, this paper defines the problem of the current music streaming payment system as its allocation of equal value on all streams. The paper proposes a framework to systematically evaluate alternative payment systems inspired by policy analysis and planning. It additionally contributes with a structured evaluation of six alternative payment systems that rethinks how streams are calculated and remunerated to restore the price discrimination between different listening behaviours. The paper finds that developing a mixture of the alternative systems can likely solve many of the current system's challenges.

Keywords: Recorded music industry; digitisation; business models

JEL Codes:

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1. Introduction

Music streaming platforms provide on-demand access to a vast music catalogue. These platforms experienced strong growth during the 2010s and now account for 67% of the global recorded music industry revenue (IFPI, 2023). Despite the growing revenues, many industry actors, especially artists and independent labels, have long criticised the current remuneration system on music streaming (AIM, 2022; Impala, 2021; Music Ally, 2022). Recently, the major labels have started to participate in this criticism. Universal Music wants to develop a more ‘artist centric’ payment system (Universal, 2023). Robert Kyncl, CEO of Warner Music Group, says it is time to change the payment system after many years of focus on subscription growth (Ingham, 2023).

This paper explores solutions to change the music streaming payment system by rethinking how streams are calculated and remunerated. The current ‘Pro Rata’ payment system pools all subscription fees of a platform and pays rights holders proportional to their share of the accumulated number of streams. This has two consequences. First, every stream is assigned the exact same value. Second, a user’s subscription fee is not only distributed among the artists they listen to. In this system, less active users subsidise the consumption of highly active users. Moreau et al. (2023) illustrate this scenario with a simple example. A music streaming platform has two users (A and B) and two artists (1 and 2). User A and B pay the same price for their subscription, but during a given month, user A listens 10 times to artist 1 and user B listens 90 times to artist 2. Although A and B have paid the same price for streaming music, the pro rata system allocates 10 percent of the revenues to artist 1 and 90 percent to artist 2. The system negatively affects artists with fans who may not have much time to listen to music. The idea of a ‘User Centric Payment System’ (UCPS) has received considerable attention (Dredge, 2019; Maasø, 2014; Meyn et al., 2022; Moreau et al., 2023; Pedersen, 2014; A. Shapiro, 2022). The UCPS changes the fundamental metrics by dividing the subscription fee of the individual user between the artists they listen to proportionally to their share of streams. However, UCPS is only one opportunity of many, and many actors’ narrow focus on UCPS may have hindered the extensive analysis of other alternative payment systems.

The topic of alternative payment systems has engaged academic circles, industry actors, artists, and governments, but the current system's underlying problem is not well-defined because of its complexity. Evaluating and comparing the alternative systems and the arguments for their implementation remains a significant challenge. This paper contributes to exploring these alternative systems by proposing a framework to systematically evaluate alternative payment systems inspired by policy analysis and planning. The paper additionally contributes with a structured evaluation of six alternative payment systems based on the proposed framework.

Many of today’s problems are of such complexity that there are no precisely correct answers. Similar to Patton and Sawicki’s (2013) description of contemporary complex problems, the problems with the music streaming payment system have both technical, computational, and political aspects. The most computationally efficient system does not necessarily distribute the revenue according to the rights holders’ preferences. Furthermore, any solution cannot be

proven correct before implementation, and the solution is not guaranteed to achieve its goals. It is possible to analyse a solution's probable effects before implementation with comprehensive quantitative and qualitative datasets. However, there will always be limitations to data's ability to present a holistic picture. An implementation's changes to a current system could also generate new behaviour on both the demand and supply sides, which is impossible to forecast. Lastly, it is difficult to measure the solution's suitability neutrally, as actors will have different understandings of what is appropriate.

Because problems within the music streaming payment system share these traits with modern society, this paper proposes attacking the issue through policy analysis and planning methods. There is no consensus on what the process should consist of, but similar to much literature on the field (MacRae & Wilde, 1985; Patton & Sawicki, 2013; Quade & Carter, 1989; Weimer & Vining, 2017), this paper will follow the process of first defining the problem, then establish criteria for evaluation of alternatives, identify alternatives, evaluate alternatives, and lastly compare the findings. The last steps of a traditional policy process, consisting of choosing and implementing a new policy, are out of the scope of the paper's contribution.

The rest of the paper is organised as follows. First, the paper defines the problem of the current system based on literature criticising the status quo, historical industry practices, academic research, and economic theory. Second, evaluation criteria are established to measure and compare the alternatives. Next, alternative payment systems are identified and evaluated based on four overarching criteria by Bardach (1972): (1) Technical feasibility. To what degree does the proposed action accomplish the objectives set forth? (2) Economic and financial possibility. What is the financial impact of the payment system? (3) Political viability. Can the payment system be acceptable to the relevant decision-makers? (4) Administrative operability. What level of administrative complexity does the payment system require? Lastly, section 4 compares the alternative payment systems and discusses their ability to solve the defined problem.

2 - Developing the framework

The following section reviews the literature on the subject to define the core problem and its extent. When the problem is defined, evaluation criteria are made for the structured analysis of the alternative payment systems in section 3.

2.1 Defining the problem

The industry's business model significantly changed when music started being viewed as a service rather than a product. The introduction of music streaming platforms significantly affected the industry and met resistance from most rights holders in its early years. The platforms experienced strong growth during the 2010s, and the recorded music industry regained some lost revenue during the piracy crisis around the millennium. Today, the platforms drive most of the recorded industry's revenue, over 90% in the most mature markets (IFPI Denmark, 2022).

The payment system for streaming platforms has, to a large extent, remained unchanged since their inception. It is an inseparable part of the premium music streaming business model that consumers have unlimited access for a fixed price every month. Therefore, a stream's value depends on the number of streams generated monthly. The current Pro Rata payment system pools all subscription fees, with each rights holder receiving a payment proportional to their share of the accumulated number of streams. This means that the individual consumer's subscription fee is not only distributed between the specific artists they have streamed, which might stand in contrast to what the consumer currently believes. Instead, consumers with low usage intensity who stream less than average subsidise the activity of consumers with high usage intensity (Page & Safir, 2019)

Many artists, industry actors, and scholars criticise the system's alleged unfairness. Artist organisations, independent labels, and major labels all propose ideas to 'fix' the music streaming payment system (AIM, 2022; Impala, 2021; Universal, 2023). Robert Kyncl, CEO of Warner Music Group, calls the current Pro Rata payment system 'misaligned' (Ingham, 2023). The need to 'fix' the system implies a fundamental problem with current practices. In a sense, the current payment system practices uniform pricing, as all streams' value is considered equal. Since many actors call for changes to the current payment system, it indicates that the core of the problem is the equal track allocation of streams. This seems likely because it contradicts the industry's tradition of using value-based pricing on its products by offering music at different prices based on the consumption context.

The versioning strategy allows a company to offer a differentiated product line, so consumers can choose the version that fits their needs (C. Shapiro & Varian, 1998). The recorded music industry has traditionally used versioning and promotional pricing for music discovery. Music discovery is an integral part of the industry, as they sell 'experience goods', where price and quality are difficult to evaluate in advance for the consumer. Bourreau et al. (2008, p. 11) call music an extreme case of an experience good, as the "*consumer must gamble ex ante not only on the ex post utility of the good but also on its potential long-term utility after a process of acculturation that he cannot foresee*". It can be challenging for consumers to overcome their reluctance to buy such goods, why they are often offered free samples and trials. In these situations, the consumer meets certain restrictions on using the product. For example, when listening to radio channels, you do not have the opportunity to choose the music being played. The radio station presents some music to your taste and some you do not necessarily like. Traditionally, if you wanted to listen to something repeatedly, you had to buy the music. The rights holders accepted a very low payment per listener on the radio because they knew many listeners were not actively engaging with the music.

With music streaming, consumers' music discovery and regular listening overlap for the first time. Consumers are essentially remunerating music from their discovery and their preferred artist and songs equally, although they may not like or listen to the music again. This is different from other cases, where sampling is considered an investment from the company in generating interest for their product and making sales if the consumer finds value in the product. As all potential music streaming payment systems consist of a fixed pool of money, it undoubtedly

leaves less income for the artists the consumer prefers. Because of the equal treatment of all streams, the current Pro Rata payment system may not align with the consumer's actual musical preferences and consumption.

The missing differential pricing within music streaming could be considered a detour of how the industry and consumers value music products, and it would be possible to return to historical practices. Why it has yet to happen might be because the primary focus has been on increasing the streaming pot instead of looking into how to share the pot. As streaming platforms have grown annually by double digits for a decade, the industry might soon expect stagnation in new subscribers. According to Will Page, a former chief economist at Spotify, music streaming may transition from a 'herbivore market' to a 'carnivore market', where platforms' growth comes from taking competitors' subscribers rather than attracting brand-new customers (Trapital, 2022). In that scenario, how streams are remunerated becomes increasingly important for the rights holder.

Furthermore, the missing action from rights holders to address the issue might also be based on the unknown consequences for each rights holder. The market leaders may be unsure of alternative systems' impacts and have pushed the decision to later. This paper provides more clarity on the impact of the industry's alternatives to assist the industry in making such decisions.

To summarise, the current Pro Rata payment system does not align the individual users' payments with their actual musical preferences and consumption. It does not always distribute a consumer's fee between the artists they listen to. Furthermore, it remunerates all streams equally, even though consumers experience varied utility between listening to their favourite artists, exploring new music, and having music playing in the background while doing other activities. Therefore, this paper defines the problem and challenges of the music streaming payment system as its allocation of equal value to all streams. A new system should experiment with restoring the price discrimination between versioned listening behaviour in music streaming.

2.2 Establishing evaluation criteria

There are several ways to address price differentiation for streams. However, before we can identify, evaluate, and compare alternatives, we must establish the criteria under which we assess them. It is a characteristic of our issue that no alternative can benefit all stakeholders. Alternatives will be suggestions to distribute a fixed pool of revenue differently than current practices, why some stakeholders will necessarily lose a share of their current revenue. Furthermore, the current pro rata system is likely the simplest system possible. Therefore, it is likely that some stakeholders experience increased costs (understood in its broad sense of resources employed) from implementing and operating a chosen alternative. Several authors have proposed definitions of criteria categories that share similarities (Dunn, 2004; MacRae & Wilde, 1985; Quade & Carter, 1989; Weimer & Vining, 2017). Like Patton and Sawicki (2013),

the paper has chosen to use Bardach's (1972) typology of the following four commonly applied evaluation criteria:

Technical Feasibility measures how and to what degree the alternative payment systems are expected to have their intended effect. In our case, behaviour on both the supply and demand sides can change or evolve. People's listening preferences can change over time, and record labels might focus on other genres than they do today. Implementing a system today may not generate the expected outcome in the long run if its effects can be considered indirect. An alternative payment system's solution should directly target the defined problem.

Within **Economic and Financial Possibility**, the paper evaluates which actors benefit financially and who experience costs from an alternative payment system. Revenue distribution between artist ranks will be used as a criteria to evaluate the alternative payment system's effect on superstardom - the concept of commercial success being highly skewed in favour of a limited number of superstars common in cultural economies. Furthermore, revenue distribution between the major label and independent sectors will be used to indicate whether an alternative system centralises the streaming revenues within the largest actors. Record labels are often divided into 'major labels', which consists of Universal Music, Sony Music, Warner Music, and their affiliated sub-labels, and 'independent (or 'indie') labels', which is a broad definition of all other labels not owned by a major label company. They are relevant to distinguish between, as the major labels had a 65,5% market share in 2022 (Mulligan, 2022).

Political Viability will, in this paper, be understood as the alternative payment systems' acceptability to the relevant power groups and decision-makers in the industry. If the alternative payment system does not receive support from the necessary stakeholders, its chance of implementation is small. The stakeholder group that will experience the smallest financial impact is the streaming platforms. Streaming platforms make a fixed commission on subscriptions, in most cases around 30%, and pay around 55% to the master recording rights holders and 15% to the rights holders of the compositions (Cooke, 2016). Implementing an alternative system will not affect their commission although additional operating costs may arise.

Record labels, artists, music publishers, and songwriters have significantly more to gain or lose from a new system. Record labels negotiate the payment system structure with the streaming platforms. Because of their market share, major labels have significantly stronger negotiation power than independent labels. Furthermore, many artists upload their music directly to streaming platforms through digital distributors. The self-releasing artists significantly outnumber the artists signed to a label, but they only represent a market share of 5,3%, however up from only 2,3% in 2016 (Mulligan, 2022). The artists do not have an actual say in the negotiations but may indirectly put public pressure on implementing a certain alternative. Similarly, music publishers and performing rights organisations negotiate with the platforms for songwriters.

New systems can be implemented through governmental regulation, but it is not necessarily a desired outcome for the industry. In such a scenario, governments in every country must implement their own rules, leading to greater complexity for all industry participants. Therefore, it would be desirable if the industry made global or regional agreements. These stakeholders will likely have different understandings of which outcomes would be satisfying. It is necessary to study the political viability of an alternative and which compromises would be acceptable for the parties. Interestingly, actors can have shared interests across stakeholder groups when approaching the topic from the angles of music genres and degree of commercial success. Alliances are also likely seen across stakeholder groups when promoting or opposing alternatives.

The last category of criteria is **Administrative Operability**. If an alternative payment system fulfils the first three criteria, it becomes necessary to understand if it is administratively possible to implement. It may be that an alternative payment system's benefits do not outweigh its difficulty in implementation and maintenance. Therefore, it is essential to remember that an alternative payment system should be a pragmatic solution to the problem. There are three perspectives when evaluating administrative operability within music streaming payment systems. First, there is the system's computational solution and its complexity. It is outside the paper's scope to develop these solutions, but the analysis will include hypotheses on the computational complexity. Second, there are the system metrics the industry must agree on. A new system likely requires the industry to redefine certain rules around calculating streams. Some systems may have more metrics than others, increasing their complexity and difficulty in finding consensus among stakeholders. Lastly, there is a system's perceived transparency. Streams' value assignment should be understandable to the rights holders receiving payments based on the chosen system.

These four categories of criteria illustrate the multifaceted nature of our problem. They will help us evaluate the alternative payment systems beyond their financial impact and assess their technical, political, and administrative feasibility. With the evaluation criteria decided and defined, identifying and analysing alternative payment systems is now possible.

3 - Alternative music streaming payment systems

3.1 Identifying and evaluating alternatives

Section 2 provided an understanding of the problem and the criteria for evaluating the alternative payment systems' ability to address the problem. The alternative systems below were identified through collected documents related to the music industry's business practices regarding payment systems on different mediums. Through the data collection, six alternative payment systems were found that fit the scope of the paper. This section elaborates on and evaluates the alternative systems on the first three groups of criteria. The administrative operability of the systems will be discussed in section 4. It is worth noting that the suggested price discrimination only financially impacts the rights holders' remuneration, as the consumer continues to pay its fixed streaming subscription fee.

The evaluation of the two first alternative systems presented has the advantage that Moreau et al. (2023) have already studied their financial impact. As will become apparent below, the findings present both positive and what could be considered negative consequences of their implementation. Therefore, the paper presents further four alternative systems that may be acceptable solutions to the problem.

3.2 User-Centric Payment System

The User Centric Payment System (UCPS) has been the system experiencing the most attention. The system solves the problem of equal track allocation by distributing each subscriber's monthly fee among the streams the user listens to during the month. The payment per stream is proportional to the user's total number of monthly streams. This stands in contrast to the current payment system, which pools all subscription fees of a platform and pays rights holders proportional to their share of the accumulated number of streams. The UCPS' income allocation method is not a new invention. Its theoretical foundation and allocation rules can also be found in the 'Shapley value' from 1953 (Shapley, 1953). Ginsburg and Zang (2001) has previously proposed using it to effectively and fairly distribute income from museum pass programs.

In terms of its Political Viability, the French streaming platform Deezer has been engaged in the UCPS debate since 2017 and has since 2019 tried to launch a pilot. The campaign has been unsuccessful to this date, as some rights holders, have yet to approve the experiment (Dredge, 2019). Tidal Music also announced plans to implement a user-centric system in 2021 (Dredge, 2022b). Tidal and Deezer have individually started initiatives with Universal Music, looking at track allocation, among other improvements (Dredge, 2022a; Universal, 2023). Soundcloud implemented a user-centric royalty system in 2021 for the 135,000 DIY artists who upload their music directly to the platform (Paine, 2022). Later, Warner Music adopted the payment system on the platform as the first major label (A. Shapiro, 2022), perhaps as a test before making decisions on the market-leading streaming platforms. The International Artist Organisation of Music also speaks favourably of the UCPS system in their latest report (Johansson, 2022). However, the member survey is mainly answered by low-tier artists who presumably do not experience the benefits of the current pro-rata system.

Other industry actors have shown their hesitation toward the UCPS. While not explicitly declining the implementation of the payment system, Universal Music Group's Chief Digital Officer, Michael Nash, referred to studies that found the system to be either without a significant effect or would be a disadvantage for many artists and "important genres" (Burger, 2023). In Impala's, the European Organisation for Independent Music Companies, ten suggestions to fix streaming, the absence of the UCPS is interesting, as many independent artists look to be in favour. In fact, a footnote explicitly states they do not propose the UCPS (Impala, 2021).

As we have seen, very low product differentiation challenges the music streaming market, as all platforms offer similar repertoires at similar prices. Most competition is currently directed

at platform curation and the user experience of the platforms. Such characteristics can be difficult to communicate to potential customers, as it is necessary to experience the platform first. The key to product differentiation is “*offering something distinctly superior to what your rivals can offer*” (C. Shapiro & Varian, 1998, p. 146). Since platforms do not financially benefit from changing the payment system, their engagement in the topic could be a strategy to differentiate as a more artist-friendly platform from market-leading platforms in an undifferentiated market.

An additional argument for implementing the UCPS is its ability to reduce fraudulent activity on the platforms. The issue has grown to such importance that a number of distributors and streaming platforms, including Believe, Tunecore, Spotify, and Amazon Music, in June 2023 formed the Music Fights Fraud alliance (Musicfightsfraud, n.d.). One type of fraud is bad actors who have found ways to financially exploit the current pro rata system, which calculates remuneration to rights holders based on the total number of subscriptions. So-called ‘streaming farms’ consist of large numbers of telephones that are set to constantly stream specific tracks from fake artists, making them able to take out more revenue in royalties than they put in with each telephone’s premium subscription. Therefore, the fraudulent activity also dilutes the remuneration that is left for real rights holders. The French ‘Centre National de Musique’ found at least 1-3% of streams in 2021 in France to be fraudulent. Deezer found that 7% of streams on their platform was fraudulent in 2022, and if that is the case worldwide across platforms, it means that the bad actors extracted over \$1 billion that year (Leight, 2023). The UCPS would be able to end that type of fraud, as it calculates a rights holder’s pro rata share on each individual user-subscription. A streaming farm would then not be able to generate more revenue in royalties than the price of their subscription - minus the platform’s commission.

The alternative system’s economic impact was long unknown, but a recent French study found that major labels slightly benefit from implementing the UCPS (Moreau et al., 2023). Furthermore, it redistributes 18,4% from the top 10 artists’ revenue to the top 101-1000 artists, who experience an average growth of 4.4% in revenue. The impact is insignificant for artists beyond the top 1000. Equally interesting, the study finds that frontline songs (music released less than 18 months ago) see a revenue loss of 10%, with songs more than ten years old gaining 21.3%. The major labels gain 3.5% in revenue, while independent labels lose 7.8%, possibly due to the increased revenue for older repertoire. As the sector of independent labels consists of hundreds of companies, it is possible that some stand to win in the implementation of UCPS, and others lose significantly more.

3.3 Factoring listening length

A solution within the versioning strategy is an alternative system that distributes revenues based on the length of a listener’s stream. The system will address the value imbalance for long-form music content that receives the same remuneration as short-form content.

Today, a stream is eligible for remuneration when the user has listened to a duration longer than 30 seconds. This means that a full stream of Taylor Swift’s recent 3-minute-long megahit

'Anti Hero', The War On Drugs' 9-minute-long indie rock song 'Under Pressure', and Brian Eno's 17-minute-long opening track on the album 'Music For Airports' are all assigned the same value of '1 stream'. A simple back-of-the-envelope calculation would show a significant difference in remuneration for the artists, from a fan listening for one hour to their music.

On a physical or download sale, the number of listens by the consumer does not impact the revenue of the rights holders, as they have already been paid. On streaming, the revenue sharing model is a market share model. The amount of plays itself is unimportant, but the stream count is important in relation to the total number of streams. Even though long-form content could constitute a significant market share of the total minutes listened to on the platform, it does not account for a proportional market share of streams. To tackle the current discrimination between long and short-form content, IMPALA suggests, in their ten steps to fix streaming, flexible rates for streams depending on their length, having a rate for the first 30 seconds to 5 minutes of a song, then further payments triggered at 5-minute intervals until 15m 30s (Impala, 2021).

The system would mark a new era for the industry's business model, as song length has not been a price indicator in physical sales and digital downloads. If track length had set the price in the physical possession era, it would have implied that a 4-minute-song was twice as expensive to produce as a 2-minute-song or that its value to the consumer was double as high. This system does not imply this. As music has become a fixed-fee service, consumers pay rights holders based on how they spend their attention. Theories of attention scarcity in the digital age have been around for almost as long as computers. The concept of the attention economy was first theorised by Nobel laureate economist Herbert A. Simon who said: "*What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention, and a need to allocate that attention efficiently among the overabundance of information sources that might consume it*" (Simon, 1971, p. 38).

Consumers have a finite amount of time every day to spend on music streaming, so it becomes important how they use it. When they listen to one artist, it decreases their time to listen to another. What becomes important in this proposed payment system is not how many songs they listen to but how much time they spend listening to a given artist. The concept is not completely new to the industry, as most countries distribute radio revenues based on similar minute values.

The system might not directly affect the proportional revenue shares between active and passive streams, but it could change the revenue distribution between genres and artist tiers within active and passive listening. The general hypothesis is that long tracks are often made within niche genres and that they would benefit from this change. Following the same hypothesis, it could decrease the superstardom effect, as the biggest acts are part of popular genres with short track lengths.

Like the price discrimination based on listening context, the independent label sector proposes a system on this matter, which implies they expect to benefit from the change. Modern pop

songs tend to become shorter, presumably the major label's best-earning genre. The length of UK top charting songs has shrunk by 20% in the last 20 years, maybe because of a shorter consumer attention span, high skip rates being penalised in the recommendation systems, and the stream payment being secured after 30 seconds (Bemrose, 2019). However, the back catalogue of the major labels consists of decades of longer-length songs still popular today. Moreau et al. (2023) find that a stream length-based pro rata system would provide similar, but less significant, results as implementing the user-centric payment system. The top 10 artists would lose an average of 14.9%, with the top 101-1000 winning 3.3%. Urban music revenues decrease 19.7%, with pop and rock winning 9.4% and 8.8%. Major labels increase their income by 3%, while independent labels' revenue decreases by 5.7%.

3.4 Factoring listening contexts

The payment system could be modified to discriminate based on the listening context. The system attempts to address the difference in value that the consumer experiences between active and passive streams and will discriminate in remuneration to the rights holder, depending on how the music has been presented to the user.

Passive listening is understood as curated streams, where the user listens to a platform-curated or third-party playlist or listens to the platform's algorithmic recommendations. In contrast, active listening is defined by the user's active choice to stream a specific song, album, or personal playlist. In industry terms, these concepts are often called 'lean-back' and 'lean-forward' streams. In this proposed system, active and passive streams will be assigned different values in the revenue distribution, to the benefit of active streams. Today's system considers all streams to possess equal value to the consumer, although it could be argued that passive, curated music on streaming platforms fills the role of radio broadcasting and music discovery for the user, which traditionally has paid less.

Before music streaming, the two listening practices were separated on different mediums, with passive listening primarily happening through radio and TV broadcasting, and active listening through CD and digital download sales. The mediums' business models are different, manifested in their revenue distribution. Radio broadcasting has an inconvenience cost for the user, as you cannot listen to a specific song when you like, but instead have music curated by others to entertain you in different situations. The medium has traditionally been seen as a promotional tool by the industry to generate revenue in their primary source of product sales. This is especially visible in the US radio system, where labels are not paid for radio plays because of their promotional utility. In Europe and most other places, labels and performing artists are compensated for radio plays.

Radio airplay is generally seen as a generous contributor to an artist's income, unlike streaming revenues, but it is rarely discussed that the remuneration per listener is significantly lower on the radio. In France, a radio play per listener generates roughly a tenth of the revenue of a Spotify free tier stream (Aly-Tovar et al., 2020). The scale of radio, where hundreds of thousands are potentially simultaneously listening, makes it a good revenue source for rights

holders, but the low per-listener rate underlines the small value consumers experience from curated music consumption. Although the inconvenience cost of not being able to skip music is gone, it is reasonable to assume that the user derives lower value from curated music on streaming platforms, which can justify a lowered royalty.

Based on much of the same reasoning, Spotify announced the initiative 'Discovery Mode' in 2020. The marketing feature allows rights holders to be favoured in recommendations in exchange for a lower royalty rate on those streams. Although the feature receives praise from certain industry actors and artists on Spotify's website (Spotify, n.d.), it has received strong criticism from other parts of the industry. WIN, the worldwide network of independent music trade organisations, calls it "a race to the bottom" with the analogy: "*If you are at the movies and one person stands to get a better view, this will work for them at first, but by the time everyone stands up, they are all back to square one.*" (WIN, 2022). The paper's proposed system does not suggest counter services for the lower passive stream value, as it skews incentives for both parties. In Discovery Mode, the extra revenue from lowered remuneration in passive streams goes to the platform, where this paper proposes to allocate that revenue to active streams.

Curated music activities on streaming platforms often have purposes, where music is placed in the background. Platforms have long curated specific playlists for activities such as running, exercising, studying, and dinner parties (Eriksson et al., 2019). A more recent trend is the rise of 'functional audio' on streaming platforms. These songs are not music but rather static sounds of nature, rain, and white noise. As people often sleep to the audio, the tracks receive millions of streams, some are even close to reach a billion streams (Tapper, 2022). Streams of functional audio are remunerated equally to everything else, eating into the earnings of more conventional music releases. All three international major labels, Sony, Warner, and Universal, object to functional audio's equal value and demand changes to the current system (Burger, 2023; Cooke, 2023; Ingham, 2023).

Similar to the paper's proposal, Impala, as part of their '10 steps to reform streaming models', suggests implementing an 'Active Engagement Mode', which encourages artists to "*stimulate active fan engagement by attaching a premium value to tracks that the listener has sought out or reached by artist, track or album name, or where she has saved, "liked", or pre-ordered an album or track, for example*" (Impala, 2021). Without stating specific suggestions, Universal has also expressed a wish to update the current system to increase the value of user engagement (Universal, 2023).

It currently strongly impacts an artist's streaming revenue, whether they are prioritised in the platform's curated activities. Aguiar & Waldfogel (2021) find it has significant effects to be included on Spotify's playlists. For example, placements on the playlist Today's Top Hits translate into almost 20 million additional streams, worth about \$77,000 in additional revenue. Furthermore, there is evidence that platforms prioritise their financial interests and recommend a more significant proportion of the content cheaper for the platform instead of optimising the content mix for the consumer (Bourreau & Gaudin, 2022).

The system would not affect what music is played in passive streams but would limit the disproportionate remuneration some artists receive from increased exposure on the platforms. This paper hypothesises that it would decrease the revenue share of the top artists and the superstardom phenomenon. The relationship between artist tier and inclusion on playlists is somewhat linear. If you are already a well-established artist, your chance of being included in the most important playlists is higher. As the independent label sector proposes a system for listening context, it must be their expectation that it will benefit their catalogue. The repertoire of the major labels is vast, and it does not only consist of top-tier artists, so it is likely that some of their mid-tier artists will benefit. Lastly, the system would lower the financial implications of the potential bias of automated recommendations, although it would not affect what music is recommended. The claims above represent effects on certain genres or artist tiers, but it is possible that the system can have a different impact on individual artists within those groups. For example, the change might benefit an electronic house artist with a relatively small but loyal fan base. In contrast, an electronic house artist with a higher monthly stream count but coming from passive streams will see their revenue decrease.

3.5 Excluding the user's first stream

This alternative system aims to direct revenue closer to the user's preferences. In practice, this could be manifested by removing the remuneration for a user's first stream on a given song. If the user chooses to listen again, it shows the consumer values the product, and payment is therefore activated.

Based on the economic theory of experience goods, it could be argued that there are currently poor opportunities on music streaming for consumers to sample goods without compensating for the music they decide they do not like. The cost of music discovery on streaming platforms is zero for the user, and all consumption is included in their subscription. User activity, however, significantly affects the remuneration of rights holders. As previously mentioned, music discovery has traditionally happened through radio listening, and such promotional channels resulted in lower remuneration for rights holders. When music discovery happens through the consumer's main music consumption channel, they end up equally remunerating the music they only had an initial interest in exploring and the music they like. Currently, all streams over 30 seconds generate revenue for the rights holder. This indirectly implies that a user knows if they enjoy and appreciate a song within the first 30 seconds. The current system, therefore, assumes that a user would skip before 30 seconds if they do not like the song.

Besides radio promotion, consumers could also often sample in the local record store, where they would have a shelf of sample CDs they could listen to in the store before deciding on buying a copy. On music streaming, it would similarly not be unreasonable if the consumer could get a representative understanding of their interest in a song before remunerating the rights holders. A characteristic of music is that you want to consume it repeatedly, unlike a book, where you will unlikely reread it anytime soon (C. Shapiro & Varian, 1998). It is, therefore, without risk (or marginal cost) for a rights holder to present the entire song to a

consumer if they genuinely believe their product will resonate with them. The author hypothesises that unique streams likely account for a substantial amount of the total streaming pool because music discovery and active listening are combined on the platforms.

The system could have a positive effect on artists with a traditional career. Unique and recurring streams are not equally valued outside the streaming ecosystem. A traditional, sustainable career is built on several pillars, such as recorded and publishing revenues, touring, and merchandise sales. If an artist's streams are mainly unique, it is unlikely they have a fan base to sell tickets to. Therefore, they will already have small chances of living from their art, but the system would make it even more difficult.

This system is expected to have a notable financial impact on passive streams because users might only return to a fraction of the tracks recommended. If they appreciate the recommendation, it is assumed they will return to the music. It would generate similar consequences on the recommender system bias, as the exposure itself is not financially beneficial if the users do not react positively to the recommendation. This contrasts with today, where exposure will lead to remuneration unless the user skips within 30 seconds. It is difficult to estimate the impact it will have on superstardom. Even though top-tier artists could lose payment on some playlist listening, they often have loyal fans that may reduce the loss.

3.6 The Artist Growth Model

The payment system could be modified to re-distribute a share of the top earners' revenue to the middle-layer artists, who are starting to establish themselves. The system attempts to address the winner-takes-all / superstardom phenomenon and invest in artists early in their careers when they need the support. Luck and chance are big factors in a successful career, and artists need a financial foundation to be available for opportunities. The current pro rata system, as well as an implementation of the UCPS, cannot support up-and-coming and niche artists in reaching scale on the platforms to give them sustainable income from streaming. This challenge can be attributed to two things. First, the superstardom phenomenon distributes most revenue to the very top. Second, streaming income spreads over decades, where most sales in the physical era occurred in the first year of an album release. The proposed system would allocate more revenue to an artist's early career steps when they need it the most.

Acknowledging that most artists need financial support in their early career, many collecting societies around the world allocate a portion of the collected royalties for cultural purposes. With the cultural funds, the Danish collecting society Koda "seeks to develop a strong music-making culture with a focus on access, retention, development and refinement of talent" (Koda, 2022). These organisations are often non-profit and member-owned, and the allocated royalties often come from the 'black box'. The industry term 'black box' refers to revenue collected by collecting societies they cannot pay accurately to their members. Many smaller radio stations and restaurants do not have the operational scale to accurately report what music they have played, and their royalties either go to cultural initiatives or will be split pro rata based on other,

more transparent income sources. Cultural funds of collecting societies can be understood as an income tax, where every member supports initiatives to maintain the complex “nobody knows anything” ecosystem to the benefit of all. Most top-earning members early in their careers have also needed such support to reach the level they are at now.

AIM, The Association of Independent Music in the UK, has proposed the ‘Artist Growth Model’, which addresses the same challenges presented above, and expects to support a broader diversity of emerging artists and credible niche talent. Their alternative is a log scale approach to calculate the value of streams. In this way, an artist’s first streams on a song are worth the most, while the most popular songs have their per-stream value decreased incrementally (AIM, 2022).

Impala, the European alliance of independent music, supports the initiative. Former Spotify and PRS economist Will Page and collective licensing expert David Safir were commissioned by AIM to model a scenario of the Artist Growth Model. In an online presentation (AIM, 2021), they presented a hypothetical scenario, meaning the exact metrics are still up for discussion. The scenario divides the top 10.000 tracks in the UK in a month into ten deciles and degresses the top two deciles by 8%. The 8% is shared between the next four deciles, leaving the bottom four deciles unchanged. In their words, the system “fattens” the body instead of the head and tail. AIM believes that the system “*would foster a fairer market by diluting the earnings of the biggest players, in order to distribute the wealth more broadly to the long tail of early-stage and niche artists who struggle to achieve scale* (AIM, n.d., p. 1).

As mentioned above, such a taxation model is not disruptive, as it is happening in other revenue streams, such as public performance royalties from radio etc. However, it would be the first time on their primary sales channel. Again, the independent sector proposes a system in this domain that implies they expect to benefit from the change. This paper will, however, argue that it is not necessarily a battle between majors and indies. It is expected that the system will create stronger opportunities for success for artists in the mid-tier within all genres, making it indifferent whether they are on a major or indie label. AIM similarly expects that major labels will see their top 1% of artists lose revenue, but the system will provide increased revenue proportionally for their other artists when the investments are in the most crucial state (AIM, n.d.). The exact results and benefits will depend on the exact metrics of redistribution. Opponents may argue that a taxation system of top performers is a matter of a country’s cultural policy strategy, rather than something the industry itself should implement. Countries can have different understandings of successes and how they should be rewarded or taxed, why it can prove difficult to implement across continents.

The system could have an indirect financial effect on passive streams, assuming that superstars are being recommended proportionally to their stream market share. The impact on passive streams might be relatively small compared to other systems suggested in the paper. The system is, however, the most explicit alternative to limit superstardom, as the reasoning is based on explicit discrimination between top earners and mid-tier artists to the supposed benefit of all in the ecosystem. It is discrimination seen elsewhere in both industry and society, so it should not be considered controversial as it may sound at first. The obvious winner of the system is the

mid-tier artist, who never manages to reach superstardom. Superstars of the future will also benefit from the change, assuming that the system played a significant role at a crucial time in their careers. The existing top tier of artists looks to be the losers. However, when the popularity of the current top tier falls, they will benefit from the system once they return to the group of mid-tier artists. A tier they may stay in for decades after their peak years. To some degree, indirect losers are also the long tail of lower-tier artists who do not see their situation strengthened. There is a high risk of diluting the benefits of taxing the top tier if it must be distributed between the mid-tier and the long tail. Because the long tail consists of such a vast amount of artists, the benefit each artist experiences would likely be insignificant and remove many justifications for the system of contributing positively to artists' careers at the most important time.

3.7 A minimum threshold system

The current system could be adjusted to have a minimum threshold of streams before payment is activated. The goal would be to improve the conditions for middle-layer musicians with a proven audience base.

Streaming platform catalogues are growing by nearly 100.000 songs daily (Ingham, 2022a), which gives the platforms significant and constantly increasing cloud storage expenses (Ingham, 2022b). Few of these songs will experience true success, and most will become part of the long tail of low-tier artists. Because consumers pay a fixed price for their consumption, it puts a ceiling on the royalties to the rights holders. Research points to increasingly scattered listening practices by consumers, possibly due to the growing number of available products (Aguiar & Waldfogel, 2016; Datta et al., 2018). Although their revenue has grown by 71% between 2016 and 2021, the major labels have seen their market share drop to 65,5% from 68,8%. Within the same period, artists releasing music without a label grew their market share to 5,3% from 2,3% (Mulligan, 2022). The assumption that more products lead to more diverse listening practices gives the industry the challenge of a “*growing number of mouths to feed*” (Will Page in Mulligan, 2022) with the same pot of money. In a sense, new colleagues weaken existing artists' revenues on the platform. This is especially true within the long tail, where most artists earn only a fraction of the total revenues. Universal's EVP Michael Nash states that almost 80% of artists on Spotify have a monthly audience of less than 50 listeners, and 90% of artists have less than 400 monthly listeners (Ingham, 2022b).

There are no signs of a slowdown in new products coming to market. It could become an increasing problem that listening continues to spread among more and more artists, making it impossible to have a proper income from streaming. Aguiar and Waldfogel (2018) have shown that consumer welfare increases with a growing catalogue, but there might be limits to that benefit, especially if artists stop producing music because of poor finances. The question is if there is even a realistic status quo scenario if it is rather a discussion of how to tackle the problem.

To address this challenge of the long tail “*eating itself*”, writer Mark Mulligan openly proposes the idea of limiting access to remuneration on streaming. The specific alternative has a pay-out threshold of 10,000 annual streams. If an artist does not reach this limit, their revenue will be distributed among the other artists making the threshold. One could also think of other thresholds and metrics for such a system. It could be considered a reverse Artist Growth Model, as it is now the lowest artist tier, handing over revenues to the mid-tier. Although it seems rather elitist, Mulligan underlines that the system has altruistic intentions. In Mulligan's perspective, the few dollars a hobbyist earns are not of significant meaning to their career, while a self-releasing artist who has started to receive thousands of streams needs the income to build their career further. It could be considered a musketeer oath, where many artists sacrifice their income to help a few peers reach the top.

It is not an alternative system without moral dilemmas. Working under the assumption that the growing catalogue represents a significant threat to the artists' economies, this could be considered a necessary evil, as the alternative would be to limit artists' access to established platforms or continue diluting all artists' earnings. In the physical era, economic barriers prevented small artists from competing with the professional industry on CD sales. There are no significant economic barriers to entering the market for artists, so it is difficult to imagine a neutral gatekeeping process for the music streaming platforms based on quality measures. Who should decide which artists' music is good enough to be on the platform?

It will likely benefit both major and independent labels, as most artists at the end of the long tail are do-it-yourself artists who upload directly to a digital distributor. It is, however, one of the only alternatives unrelated to former or current industry practices. Even though an artist sold only one CD or was played on the radio once, they always had the right to be remunerated. Although it can be difficult to justify, discussing whether a minimum threshold will be necessary on music streaming platforms going forward is interesting.

4 - Implementing a new system

4.1 Comparing the alternatives' applicability

Section 3 identified the alternative payment systems and evaluated their technical feasibility, political viability, and economic and financial possibility. The alternative payment systems offer different approaches to solving the problem of track allocation, and there is not necessarily only one that would be an appropriate implementation. The findings have been summarised in Table 1.

	Technical Feasibility	Political viability	Economic and Financial Possibility	Administrative Operability
UCPS	Track allocation based on individual consumer behaviour	Supported by some artists and services	Benefits major labels and vintage catalogue, decreases superstardom	Additional complexity, no metrics to be decided
Factoring listening length	Track allocation based on temporal consumption	Supported by independent labels	Benefits major labels and vintage catalogue, decreases superstardom	Additional complexity, few metrics to be decided
Factoring listening contexts	Track allocation based on listening context and recreating music discovery	Supported by independent labels, Major labels support value decrease of functional audio	Unknown	Additional complexity, few metrics to be decided
Excluding the user's first stream	Track allocation based on recreating music discovery	Unknown	Unknown	High additional complexity, no metrics to be decided
The Artist Growth Model	Track allocation based on popularity	Supported by AIM	Decreases superstardom	Low additional complexity, many metrics to be decided
A minimum threshold system	Track allocation based on popularity	Unknown	Benefits all established rights holders	High additional complexity, few metrics to be decided

Table 1 - Evaluation of the alternative payment systems

The paper has yet to elaborate on the administrative operability of each system. As mentioned in section two, administrative operability within music streaming payment systems is affected by the system's computational complexity, the number of metrics that need to be agreed upon, and perceived transparency.

UCPS increases the complexity compared to the current 'pro rata' system, but it is likely lower than other alternatives reviewed in this paper. Given that several platforms have promoted the payment system, it must be expected that they have found a computational solution. The industry would not need to create specific metrics. The only change is that pro rata calculations are made on the individual subscription instead of the total pool. The stronger relationship between user behaviour and artist remuneration would increase the feeling of transparency, but it will simultaneously produce individualised royalty payments, which may decrease the sense of transparency for some rights holders. Because of the individualised subscription calculations, streams' value can change significantly. One subscriber may listen 50 times a month, another may listen to music during all their working hours, resulting in thousands of streams. Therefore, two artists can receive very different remunerations for one million streams because one artist likely has less active users than the other. The system's strong ability to fight fraudulent activity may although weigh higher than the potential negative consequences.

Basing the stream value on song length requires a more complex payment system calculation but should not be out of reach. The system can also be considered pro rata, although it is now based on time rather than number of streams. The industry would need to agree on whether it is based on per second, minute, or a ladder structure, as suggested by Impala (Impala, 2021). The payment system would remove the importance of an artist's number of streams and implement the primary factor of time consumption. Transparency is kept as rights holders would receive equal remuneration based on time, but it is of great importance that it becomes communicated properly to rights holders that royalty payments are based on time consumption and no longer on the number of streams.

Assigning different values to passive and active streams to lower remuneration for music discovery is not expected to be complex. There is likely only one metric to be agreed upon, how much a passive stream should be worth. There can, however, be different opinions between rights holders on what the value should be. It is also possible that more metrics are created, for example, by differentiating between algorithmic and editorially curated streams. In this scenario, rights holders can experience different remuneration for one million streams, but it can transparently be linked to the streaming context of the streams.

Excluding a user's first stream of a song could lead to a computationally complex system. Currently, monthly calculations and payments are made, and the system does not need to include data from any other period. This would change because the system needs to check the user's full listening activity retrospectively for a longer period. It could be the user's full subscription period or, alternatively, a decided number of years. If a decent computational

solution is found, the retrospective period is the only metric the industry must agree on. Although the computational complexity looks to increase, the paper expects the system's transparency to remain intact, as all eligible streams would receive their pro rata share of the revenues. Therefore, royalty payments would be easily understandable for rights holders.

The Artist Growth Model offers a system without much increased computational complexity, as revenue is redistributed after streams are calculated in its traditional process. The system although has several metrics that need to be agreed upon by the industry. First, whether the calculations should be made at the track or artist level. Second, which top percentiles should be regressed, and by how much? Lastly, deciding on who makes the calculations. A streaming platform only has its own streams, so it cannot calculate the regressions based on popularity across all platforms. If each platform made the calculations, the results would be skewed because the platforms' consumer bases are not similar. Page and Safir (2018) suggest outsourcing the assignment to each country's official charts company, which already receives this information. It will undoubtedly increase the administration expenses, but according to the authors, it is an expense not outweighed by the system's benefits.

The issues above concern how the professional industry should divide income among itself. Another approach is the alternative system with a minimum threshold, where the professional industry seeks to decrease the market share of what could be considered hobby musicians or at least early do-it-yourself artists. All professional stakeholders would benefit, and it would, therefore, be fairly easy to implement from a political perspective. However, some stakeholders might consider it a dangerous path, as it is unknown if there might be ethical repercussions in the media or by consumers. Implementing a minimum threshold would furthermore have similar administrative problems as the alternative of excluding the first stream. Calculations are made monthly, but the systems need to factor in an artist's yearly number of streams. One option to circumvent this would be to change to a monthly threshold, for example, 1.000 streams per month instead of 10.000 annual streams. Alternatively, a monthly monetary threshold could be set, for example, 50 euros. The threshold would have to be decided by the industry, which could prove difficult.

The considerations above seem to show that there is no direct relationship between computational complexity and the level of perceived transparency. The revenue distribution in a computationally complex system can sometimes be easily understood. In contrast, it can be more difficult to dissect the royalty statement from a system of lower computational complexity because of its metrics for stream valuation. This only adds to the difficulty of choosing an alternative system. The User Centric Payment System remains an appealing alternative. It has many supporters, financially favours the major labels, which have the strongest negotiation power, and it is administratively feasible. Its two major challenges look to be its favouring of vintage catalogue and its perceived non-transparent royalty payments to rights holders, which can lead to confusion and disinformation in artist communities. Redistributing revenue to vintage catalogues would decrease the labels' possibilities to re-invest revenue in contemporary artist careers.

The available data suggest that the financial impact of factoring song length is less significant than that of UCPS, which is why its benefits may be outweighed by the additional complexity and the potential resourceful campaign to convince other decision-makers of its implementation. The lack of quantitative data disadvantages the evaluations of the remaining models in showing their financial impacts. Quantitative analysis is necessary to evaluate the models on equal terms, but it is already possible to make assumptions about their applicability. Independent labels already support factoring listening context, and Universal has shown support for rewarding user engagement (Universal, 2023). It should be possible to implement if the decision-makers agree on a few metrics of how to value differentiated stream contexts.

To the author's knowledge, excluding the user's first stream has not yet been discussed by industry stakeholders, why it is difficult to know its political viability. The financial impact is also unknown, but the paper believes it could significantly impact the revenue distribution. It is expected to bring considerable complexity to the administration, but the missing data makes it too early to discard the alternative. Lastly, the paper finds that a minimum threshold system seems unlikely to be implemented in the suggestion's current form. Although it does not decrease the income of important decision-makers, it can be difficult to justify removing remuneration from the very low tier to benefit middle and top-tier artists. Furthermore, its additional complexity may prove difficult and resourceful to implement from a computational perspective. However, if the number of releases continues to grow at the current pace, it may become necessary to implement gatekeeping procedures to limit the dilution of the royalty pool.

Reintroducing gatekeeping to concentrate revenues on mid- and high-tier artists could be done differently than setting a certain threshold of streams. When reading Universal's and Warner's comments on the flaws of the existing system, they both express dissatisfaction that their music releases by 'real artists' are equally valued with 'functional music'. Universal wants a more 'artist-centric' model (Universal, 2023), where Warner believes Ed Sheeran's music should be worth more than the sounds of rain (Ingham, 2023). It will presumably be impossible to implement descriptive thresholds in the sense that a service can define and categorise music made by real artists and what is not. If categorising is the responsibility of the rights holders, fraud can be expected to increase their own revenue. Instead, if it is possible to identify significant differences in consumers' behaviour when listening to traditional artists and more functional music, a solution could be to develop a payment system that rewards listening patterns in favour of traditional artists and thereby decrease remuneration on functional music. This can likely be achieved by mixing alternative systems introduced in this paper that match the behaviour the industry wishes to reward.

5. Limitations and policy impact

The paper has developed a framework to structurally evaluate alternative payment systems' solutions to the current pro rata system's equal track allocation. Six models have been evaluated, and it is difficult at this stage to suggest only one payment system. It has become evident that all solutions generate disadvantages, together with their positive impact. The

alternative systems demonstrate promising preliminary results in solving the current system's problem. However, experiments still need to be performed to evaluate the alternative systems on equal terms. The alternative systems with the strongest empirical foundation also present consequences that may not be beneficial to implement. Most concerning is the strong decline in revenues for the frontline catalogue. It could result in drawbacks in financing new releases and thus decrease the innovation of the industry. Therefore, it may be more beneficial to explore the possibilities of generating a mixture of alternative systems to combine their functionalities and benefits and if such mixtures can minimise their negative effects. The alternative systems evaluated do not exclude each other's implementation. An example could be a User-Centric Payment System that factors listening context and listening length. Lastly, developing a variation of an already identified alternative system could also produce other, perhaps more substantial, results.

The overview in Table 1 shows that it is challenging to conclude several aspects based only on the qualitative data available. It would be necessary to model all alternative systems with a quantitative dataset similar to Moreau et al. (2023) to strengthen the evidence of their financial impacts. If quantitative research disproves the hypothesis behind a system, it becomes relevant to question the proponents about their support for the system. Furthermore, the analysis of the alternative systems' political viability is based on available public statements on why it would be beneficial to conduct further research and engage with the relevant actors to better understand their positions. Do they support an alternative system because they believe its characteristics are more accurate for calculating streams and user activity on the platforms? Or is it instead the expected financial result of the system that is appealing?

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