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Washington, D.C.

In the Matter of: Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords III)	**DOCKET NO. 16–CRB–0003–PR** **(2018–2022)**

CORRECTED WRITTEN REBUTTAL TESTIMONY OF MICHAEL L. KATZ

(On behalf of Pandora Media, Inc.)

Submitted February 15, 2017

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I. QUALIFICATIONS, OVERVIEW OF ASSIGNMENT, AND SUMMARY OF CONCLUSIONS

1. My name is Michael L. Katz, I am the Sarin Professor Emeritus in Strategy and Leadership at the University of California at Berkeley's Haas School of Business Administration. I am also professor emeritus in Berkeley's Department of Economics. I previously served on the faculties of the Department of Economics at Princeton University and the Stern School of Business at New York University. I received my A.B. from Harvard University *summa cum laude* and my doctorate from Oxford University. Both degrees are in Economics. A more detailed description of my qualifications is provided in my written direct testimony in this proceeding and my curriculum vitae attached to that testimony.[1]

2. As discussed in my written direct testimony, at the request of counsel for Pandora Media, Inc. ("Pandora"), I interpreted the 801(b)(1) statutory objectives from the perspective of economics and conducted an assessment of their implications for the appropriate structure and levels of the statutory royalty rates for interactive music streaming services. I also examined several potential "benchmark" agreements and assessed whether these benchmarks are informative to the rate-setting task at hand, and, if so, whether adjustments to these benchmarks are necessary to arrive at "reasonable" royalty rates and terms that best achieve the four statutory objectives.

3. Briefly, my findings were the following:

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[1] Written Direct Testimony of Michael L. Katz, November 1, 2016 (hereinafter *Katz WDT*).

- *Economics offers the following insights with respect to the interpretation and application of the 801(b)(1) objectives:*
  - **Maximize Availability:** Statutory royalties should allow both copyright owners and statutory licensees opportunities to earn adequate financial returns if they are able to create offerings that are attractive relative to those of their competitors.
  - **Afford Fair Return/Fair Income:** Although economics does not prescribe a specific notion of fairness, many economic policies are predicated on the idea that an outcome is fair if it corresponds to what would have happened in an effectively competitive market.
  - **Reflect Relative Roles:** To a large extent, the objective of reflecting copyright owners' and users' relative roles in making contributions and incurring costs raises considerations similar to those raised by the first two statutory objectives: maximizing availability and fairness.
  - **Minimize Disruptive Impact:** Absent a showing that the industry is in a financial condition such that business as usual—at least with respect to the licensed activities—is unsustainable, maintaining the status quo is the least disruptive path forward.
- *Mechanical rights and public performance rights are perfect complements, which implies that the sum of these rates is the relevant quantum for economic incentives and welfare.* For an interactive streaming service, mechanical rights

alone or public performance rights alone are worthless, but together the rights are potentially valuable. As a result, there is no rigorous economic basis for allocating the total value that they create between the two types of rights. This fact is reflected in the industry-wide, negotiated settlement that underlies the statutory license currently in effect (the "2012 Settlement"), a key provision of which sets the *sum* of mechanical and public performance royalties equal to a percentage of service revenues.

- *The 2012 Settlement is an excellent benchmark for rate-setting in the present proceeding.* This is so for several reasons:
  - — It involved similar (and, in some cases, the same) parties, and an identical set of rights;
  - — unlike some other potential benchmark agreements that cover other services and products (or were negotiated concurrently with agreements covering other services or products), the 2012 Settlement covered only the rights at issue in the present proceeding;
  - — it is relatively recent and an examination of how the industry has changed demonstrates that it is not an outdated benchmark;
  - — there do not appear to have been any asymmetries in market power or bargaining positions that would have distorted the outcome in favor of interactive streaming services; and

— the settlement was negotiated in the shadow of an 801(b)(1) rate-setting proceeding in which both sides could have litigated, and I am unaware of any evidence indicating that either side was disadvantaged with respect to the ability to pursue such litigation.

- *With one exception, the overall royalty structure of the 2012 Settlement remains economically sound and promotes achievement of the four statutory objectives.* For each service to which it applies, the 2012 Settlement royalty structure contains: (a) a revenue-based prong equal to a percentage of service revenue less the royalties paid for performance rights (*i.e.*, there is an "all-in" or *headline rate* for the sum of mechanical and public performance royalties); (b) a *per-subscriber minimum* that applies to the sum of mechanical and public performance royalties; and, for certain types of services, (c) a *per-subscriber floor* on mechanical royalty payments (a "mechanical-only floor"). Based on my examination of changes in industry conditions since the 2012 Settlement was reached, I have concluded that:

  — *Collecting total royalties for mechanical plus public performance rights on a percentage-of-revenue basis remains economically sound.* Indeed, imposing a new rate structure would run counter to the 801(b)(1) objective of minimizing disruption.

  — *Having service-specific, per-subscriber minimums for combined mechanical and public performance royalties remains sound.* As the streaming industry continues to introduce innovative new types of services, allowing for

minimums to address revenue-measurement issues while allowing flexibility for innovative, differentiated services remains appropriate.

— *As a result of past and potential future fragmentation of the licensing of musical compositions' public performance rights, per-subscriber floors applying only to mechanical royalties are no longer economically sound.* Since the time the 2012 Settlement was negotiated, the marketplace for negotiating musical works public performance rights licenses has become fragmented. Well-accepted economic principles indicate that, due to the exercise of market power, this fragmentation can be expected to lead to higher total royalties for performance rights even in the absence of any increase in the underlying value of those rights. These higher performance rights royalties would interact with the current mechanical-only royalty floor to boost the effective "all-in" royalty rate above the rates contemplated by the 2012 Settlement. Consequently, the mechanical-only royalty floor should be eliminated.

- *There have been no significant changes in industry conditions since the statutory rates that are currently in place were negotiated that would justify an upward adjustment to the headline rates.* If anything, examination of how industry conditions have and have not changed supports a conclusion that the 2012 Settlement headline royalty rate should be lowered for the 2018-2022 period to best achieve the four statutory objectives. For example, interactive streaming's relative contribution has increased but royalty rates have not been adjusted

accordingly, which raises concerns regarding availability, fairness, and reflecting relative roles.

- *Consideration of other candidate benchmarks reinforces these conclusions.*
  - — *Direct Pandora/Publisher Deals:* Direct deals recently reached between Pandora and music publishers support the conclusion that the overall structure is sound subject to eliminating the mechanical-only floors.
  - — *Subpart A Agreement:* Music publishers have recently agreed to royalty rates for phonorecords and permanent digital downloads that, when stated in comparable terms, are lower than the corresponding statutory royalty rates currently in effect for interactive streaming, supporting the conclusion that the royalty rates at issue in this proceeding should not be raised above the level of the rates in the 2012 Settlement.

4. In this rebuttal testimony, I address several issues, arguments, and pieces of evidence raised in written direct testimony submitted by Copyright Owners' witnesses, particularly the written direct testimony of Copyright Owners' economic experts, Drs. Eisenach, Gans, and Rysman.[2] At a very broad level, these economic experts make two sets of arguments. First, they criticize use of the 2012 Settlement as a benchmark, arguing that its royalty structure is inappropriate and that its royalty rate levels are unreasonably low. Second, they attempt to justify the royalty structure and rate levels of

[2] Expert Report of Jeffrey A. Eisenach, Ph.D., October 31, 2016 (hereinafter *Eisenach WDT*); Expert Report of Joshua Gans, October 31, 2016, (hereinafter *Gans WDT*); Expert Report of Marc Rysman, Ph.D., October 28, 2016 (hereinafter *Rysman WDT*).

Copyright Owners' proposal, which would set royalties at the greater of a per-play rate equal to approximately [redacted] the 2015 effective per-play rate and a per-user rate more than [redacted] the 2015 effective per-user rate.[3,4]

5. Drawing on my training and experience as an economist, my examination of the public records of earlier proceedings, my analysis of the relevant industries, and my examination of the evidence produced in the present proceeding—including the written testimony of Copyright Owners' economic experts—I continue to reach all of the conclusions summarized above, as well as others stated in greater depth in my written

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[3] 2015 is the most recent year for which full-year data are available. Copyright Owners have proposed a $0.0015 per-play rate and $1.06 per-user rate. (*In the Matter of Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords III)*, Docket No. 16-CRB-0003-PR (2018-2022), Copyright Owners' Proposed Rates and Terms, November 1, 2016 (hereinafter *Copyright Owners' Proposed Rates and Terms*), at B-6.) Based on data underlying Dr. Eisenach's rate analysis and including advertising-supported and trial services, in 2015, the average effective per-play rate was [redacted] and the average per-user rate was [redacted] (NMPA00001647.xlsx.) Copyright Owners' proposal represents an even greater increase from the status quo than these figures indicate for several reasons, including: (a) Copyright Owners propose a greater-of structure, so that the effective per-play rate under their proposal may exceed $0.0015; (b) the average effective per-play rate has been trending downward and, thus, would be less than [redacted] in the future; and (c) the [redacted] per-play rate applies to a smaller percentage of plays than would the $0.0015 per-play rate because Copyright Owners' proposal would expand the scope of compensable plays to include all plays, in contrast to many current direct agreements that exclude short plays known as "skips" (*e.g.*, plays less than 30 seconds in length). It is my understanding that an issue analogous to (c) also arises for effective per-user rates due to a distinction between "user" and an "active user."

[4] Experts testifying on behalf of Apple Inc. also argue that a per-play rate structure is superior to a percentage-of-revenue structure for interactive streaming. (Expert Report of Jui Ramaprasad, November 1, 2016; Expert Report of Anindya Ghose, November 1, 2016.) To the extent that their arguments overlap with those of Copyright Owners' economic experts, my criticisms of Copyright Owners' experts' analysis applies equally to Apple's experts' analyses.

direct testimony.[5] Moreover, I have reached the following conclusions with respect to the written direct testimony of Drs. Eisenach, Gans, and Rysman:[6]

- *Dr. Rysman offers several unsound arguments against percentage-of-revenue royalties and in favor of per-play royalty rates.* Most fundamentally, Dr. Rysman does not appropriately account for the nature of the costs associated with creating and streaming musical works and for the way in which interactive streaming services have adopted revenue and pricing models that create value for consumers, the services, and Copyright Owners alike. In addition, Dr. Rysman's concerns regarding the measurement of service revenues and the timing of their realization are overstated and can be—and have been—addressed through the use of per-subscriber minimums. Lastly, Dr. Rysman asserts that efficient bargaining in a hypothetical free market would never lead to a revenue-based royalty structure, yet such royalties are used in many markets and are a central feature of the royalties for sound recording performance rights licensed to interactive services—royalties that Drs. Eisenach and Gans identify as being exemplars of free-market negotiations.

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[5] A list of materials that I have considered in preparing my testimony is provided in Appendix A.

[6] In this rebuttal report, I have attempted to address the major arguments presented by Drs. Eisenach, Gans, and Rysman as well as the major supporting evidence or examples referenced. Any silence with respect to a particular fact or opinion stated should not be interpreted as agreement with Copyright Owners' witnesses unless I specifically state such an agreement. I reserve the right to provide further detail and examples supporting my major rebuttal points at deposition or trial, as appropriate.

I also reserve the right to supplement or amend this testimony if my opinions change as the result of analyzing evidence that newly becomes available to me.

- *Drs. Gans's and Rysman's arguments against the use of a menu of royalty rates are unsound.* Contrary to Drs. Gans's and Rysman's assertions, it is beneficial to Copyright Owners, streaming services, and music consumers to have a range of different royalty rates depending upon the nature of the service and the underlying revenue model. This conclusion follows from the fact that different services give rise to different opportunity costs and face different demand conditions (*e.g.*, different price elasticities of demand for different services).

- *Drs. Eisenach and Gans adopt a benchmark that is biased upward.* Both Dr. Eisenach and Dr. Gans conduct benchmark analyses based on the license terms for the sound recording rights utilized by interactive streaming services. However, as was well established in *Web IV*, the sound recording royalty rate paid by interactive services is distorted upward by the exercise of record company market power and the Cournot Complements Problem.[7] Moreover, Drs. Eisenach's and Gans's benchmark analyses are internally inconsistent: if their claims that publishers should receive higher royalties are correct, then it follows by Dr. Gans's own logic that record companies should receive lower royalties and, thus, the current record company royalty rates should not be used without a downward adjustment. Neither Dr. Eisenach nor Dr. Gans corrects his benchmark analysis to account for any of these distortions. Consequently, they both reach rate recommendations that are biased upward.

[7] See *Katz WDT,* ¶ 93 and references therein for an explanation of the Cournot Complements problem.

- *Dr. Eisenach's adjustment-ratio approach is arbitrary and unreliable.* Dr. Eisenach uses an adjustment factor in an attempt to convert sound recording royalty payments into appropriate payments for musical works (his sound-recording-to-musical-works adjustment ratio). Yet, as Dr. Eisenach admits, this ratio approach is not based on economic principles. Bargaining theory and practical experience make clear that there is no reason to believe that the equilibrium ratio of sound recording to musical works royalties in a given marketplace is indicative of what that ratio would be in a different marketplace. Indeed, the ratio in any given marketplace is highly sensitive to a variety of factors. For example, as Dr. Gans testifies, bargaining theory implies that, to the extent that revenue ratios make sense, they must be adjusted to account for cost differences incurred by publishers and record companies in different marketplaces—something that Dr. Eisenach does not do. The wide range of ratios cited by Dr. Eisenach is a consequence and confirmation of the unreliability of his approach.

- *Dr. Eisenach's calculations of per-play performance royalties for musical works are inconsistent and unreliable.* Dr. Eisenach's analysis relies on calculating an estimated rate for total musical works royalties and then estimating the mechanical royalties for musical works by deducting an estimate of the performance royalties for musical works. Dr. Eisenach's estimate of performance royalties for musical works therefore plays a central role in his analysis of rate levels. Dr. Eisenach proposes two methods for estimating per-play performance

royalties that are generally inconsistent with one another and each of which is unreliable in its own right. One method attributes *any* difference between the all-in rate sound recording royalty rates paid by interactive and noninteractive services to the mechanical royalty rate for interactive services. This approach lacks a foundation in sound economics and is contrary to observed behavior. A second method attempts to calculate per-play performance royalties for musical works based on what certain services currently pay. This analysis is based on a biased sample of data that Dr. Eisenach himself criticizes and is unreliable.

- *Dr. Gans's Shapley value analysis relies on unrealistic assumptions that substantially affect his findings.* Dr. Gans employs a Shapley value analysis to derive what he concludes is an appropriate rate for the rights at issue in this proceeding. However, Dr. Gans's theoretical model of rate levels is unreliable and biased upwards. Specifically, the outcome of his analysis is highly sensitive to unrealistic assumptions that he makes, and Dr. Gans utilizes a key parameter with a value derived by Dr. Eisenach through an analysis that is seriously flawed and directly contrary to conclusions reached by the Judges in *Web IV*. Using a more appropriate parameter value—even while maintaining all of Dr. Gans's other assumptions—results in a dramatically lower estimate of reasonable royalties.

- *Dr. Gans ignores important implications of his approach that reveal that his approach is internally inconsistent and yields implausible results.* Under the particular assumptions that he has made, Dr. Gans's Shapley value analysis

implies that music publishers and record companies should earn equal profits. Dr. Gans's approach also implies the equilibrium royalties should result in the streaming services' earning positive profits. Yet, interactive streaming services generally have yet to be profitable, and it is unclear that they will ever be profitable, even absent the dramatic rate increase proposed by Copyright Owners in this proceeding. Dr. Gan's ignores this fact. He also ignores the implication of what he claims is the artificial suppression of musical works mechanical royalties, which—by the logic of his approach—is to bias his estimate of reasonable royalties upward.

- *Dr. Rysman's conclusion that interactive services have thrived while paying effective royalty rates above those proposed by Copyright Owners is unreliable and misleading.* Dr. Rysman's analysis is fundamentally flawed in several ways. First, several of the services on which he bases his conclusion that services have thrived while paying effective per-play rates above what Copyright Owners propose have, in fact, attracted very few users. Perhaps the most egregious example is Dr. Rysman's calculated royalty rate for Steinway in 2014, which is based on [redacted] If one focuses on the interactive services that have been more successful in attracting users, Dr. Rysman's own analysis reveals that, in 2015 (the most recent year that he examined), Amazon, Apple, Rhapsody, and Spotify [redacted] the per-play prong of Copyright Owners' proposal. Dr. Rysman also fails to account for the industry dynamics that are the focus of much

of his testimony. Although he acknowledges that effective per-play rates are falling, his analysis does not account for this trend and ignores the fact that the services have been unprofitable despite historically paying royalties substantially below those that Copyright Owners propose. Dr. Rysman also conducts a similar analysis with respect to effective per-user mechanical royalty rates, and this analysis is similarly unreliable and misleading.

- *Drs. Eisenach's and Rysman's analyses of the 2012 Settlement and industry performance are unsound.* Drs. Eisenach and Rysman make two related arguments in an attempt to avoid confronting the implications of the success of the 2012 Settlement: (i) that the negotiated rates were always intended to be transitory; and (ii) that the negotiated rates were not intended to be precedential. Regardless of the motivation for the 2012 Settlement, the levels and changes in various measures of industry structure and industry performance support the conclusion that the royalty rates and structure of the 2012 Settlement remain broadly reasonable. In fact, a variety of evidence indicates that, due in part to the rise of streaming, industry performance is improving. This improving performance has benefitted music publishers through increases in total royalty revenues for musical works.

6. The remainder of my written rebuttal testimony explains these conclusions in greater depth and provides details of the facts and analyses that led me to reach them.

II. COPYRIGHT OWNERS' EXPERTS' ANALYSES OF THE APPROPRIATE MECHANICAL ROYALTY RATE STRUCTURE ARE FLAWED.

7. As I discussed in greater detail in my written direct testimony, in the 2012 Settlement, industry participants agreed to a rate structure that assessed total royalties for mechanical rights and public performance rights for interactive services on a percentage-of-revenue basis subject to certain minimums and floors.[8] My economic analysis identified no industry performance measures or changes in industry conditions since the 2012 Settlement that would require changing the fundamental structure of the percentage-of-revenue prong or the "all-in" rate minimums applied to the calculation of the available royalty pool in step one of the royalty calculation.[9] The only change that my analysis indicated is appropriate is the elimination of the mechanicals-only floor in step three of the calculation, which follows the deduction of performance royalties paid by the same licensees to the same rights holders or their agents.[10]

8. By contrast, Dr. Rysman asserts that a complete overhaul of the current rate structure is needed, asserting that "[a] rate structure based around a revenue test is deeply unsuited to ensuring a fair return to rightsholders or achieving the policy objectives… [while] [a] rate strucutre [sic] based on per-play and per-user rate tests is reasonable and suited to the policy objectives."[11] In short, Dr. Rysman claims that the revenue-based rate structure embodied in the 2012 Settlement: (a) leads to difficulties in the calculation

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8 *Katz WDT*, § IV.B.

9 *Katz WDT*, § IV.C.

10 *Katz WDT*, § IV.C.3.

11 *Rysman WDT*, ¶ 11.

of royalties due to both measurement and timing issues with respect to service revenues; (b) sends the wrong pricing signals to interactive streaming services; and (c) gives interactive streaming services an artificial competitive advantage over sellers of CDs and permanent digital downloads. Similarly, Dr. Gans asserts that "[t]he existing rate structure and the level of statutory rates for interactive streaming and limited download services have not performed well…,"[12] and he argues that there should not be different rate terms and structures for different business models or products.[13]

9. In the present section, I evaluate Drs. Gans's and Rysman's arguments regarding the royalty structure, and I conclude that they are either misplaced or overstated. None of these arguments causes me to change my earlier conclusion that the structure of the 2012 Settlement is reasonable and should be continued subject to the one modification I identified.

A. DR. RYSMAN'S CONCERNS REGARDING THE MEASUREMENT AND TIMING OF SERVICE REVENUES ARE OVERSTATED AND CAN BE ADDRESSED THROUGH PER-SUBSCRIBER MINIMUMS.

10. As I described in my initial testimony, determining a licensee's applicable revenues is relatively straightforward when the licensee operates its interactive streaming service as a stand-alone, subscription-based, music-only business.[14] However, if the streaming service is operated to generate other economic benefits for the parent company (*e.g.*, to foster broader and deeper relationships with customers that facilitate the

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12 *Gans WDT*, ¶ 8.

13 *Gans WDT*, ¶¶ 52-59.

14 See *Katz WDT*, ¶ 82 for the testimony summarized in this paragraph.

profitable sales of other goods and services) or incorporates non-music offerings to a significant degree, it can be difficult to accurately calculate the relevant music service revenue. Accounting difficulties also arise when a streaming service is sold as a part of a larger bundle of services, or when the service is advertising supported and the advertising is sold in bundles that include other outlets. Under these circumstances, any proposed allocation of revenues across services and goods is likely to be contentious.

11. Using the term "revenue displacement," Dr. Rysman identifies similar measurement issues that arise when some services generate profits for other parts of their parent companies' operations or (through contract) for third parties offering complementary services.[15] In addition, Dr. Rysman identifies several features of the industry that he concludes lead interactive streaming services to "defer" the realization of revenues in order to invest in building up a customer base that promotes greater long-run

[15] *Rysman WDT*, § III.E, particularly ¶¶ 27 and 31. That said, Dr. Rysman ignores implications of his own examples that undermine his argument. For example he asserts that "in *The Song Machine*, John Seabrook notes that Spotify's collaboration with Facebook allows for 'Playlists [to] be customized according to an individual user's 'taste profile.'" (*Rysman WDT*, ¶ 31, footnote omitted.) Rather than indicating that Spotify's revenues necessarily understate the value that Spotify derives from licensed music, Dr. Rysman's example demonstrates that streaming services create value by combining numerous inputs (here, consumer data from Facebook) in addition to the licensed music. Indeed, the passage in *The Song Machine* cited by Dr. Rysman identifies Spotify's purchase of the artificial intelligence company Echo Nest as a main driver of developing the ability to utilize a wide range of data sources besides Facebook to estimate users' taste profiles. (John Seabrook (2015) *The Song Machine: Inside the Hit Factory*, New York: W.W. Norton & Company, at 288-289) .

profitability.[16] According to Dr. Rysman, the possible displacement and deferral of revenues render a royalty structure based on a percentage of revenues unreasonable.[17]

12. Although Dr. Rysman and I agree on the existence of revenue measurement issues, we disagree on: (a) the extent to which the potential deferral of revenues undermines the use of a revenue-based royalty, and (b) the implications of the possible deferral and displacement of revenues and profits for the reasonableness of various rate structures in the current proceeding. With respect to (a), I believe Dr. Rysman has incorrectly analyzed and—as a result—overstated the potential problem. With respect to (b), it is my opinion that the existence of deferral and displacement issues does not imply that use of revenue-based royalties is unreasonable in the present context when coupled with set of per-subscriber minimums, as was done in the 2012 Settlement.

1. Deferred Revenues

13. In reaching his conclusions regarding the implication of revenue deferral, Dr. Rysman commits important errors in economic logic. In addition, certain of the empirical claims that he makes in his analysis of the incentives to defer revenues or profits appear to be contradicted by the facts.[18] Ultimately, these empirical claims

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16 *Rysman WDT,* § III.

17 *Rysman WDT,* ¶¶ 36 and 39, and §§ IV.B.1 and IV.B.2.

18 I summarize two examples here. First, Dr. Rysman claims that a "large fraction" of a streaming service's "costs are fixed costs, in that they are expenditures to the services regardless of how many consumers the service serves." (*Rysman WDT,* ¶ 17.) In fact, the vast majority of a streaming service's costs (*e.g.,* content royalties, server capacity, and advertising sales forces) are *not* fixed. For example, Spotify's content costs' correlation with Spotify's revenues is [redacted] and content costs are equal to nearly [redacted] Dr. Rysman states that [redacted]

(whatever their merit) are largely a distraction because, once Dr. Rysman's logical errors are corrected, the concerns he raises regarding a percentage-of-revenue rate structure are resolved. I also explain why—even if the incentives Dr. Rysman claims to exist were strong—they would not pose a significant obstacle to a structure such as that of the 2012 Settlement.

14. Dr. Rysman begins his analysis by identifying various economic mechanisms through which building a customer base today can serve as an investment in profits tomorrow (*e.g.,* network effects, consumer lock-in, or greater amounts of data about consumers). Given these investment benefits that are realized in the future, an interactive service that acts to maximize its long-run profits will choose short-run output levels that are greater than those that would maximize short-term profits—the service has an incentive to produce additional output today (*e.g.,* attract more customers) because of the

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[redacted] (*Rysman WDT*, footnote 15, citing [redacted].) Collectively, these [redacted] were equal to [redacted] Spotify's revenues in 2015. As to whether they vary with sales or not: [redacted] (See backup files submitted with this testimony.)

Second, Dr. Rysman cites the role of "exclusives" as a rationale for seeking scale, arguing that artists will want to reach exclusives with larger rather than smaller services. (*Rysman WDT*, ¶ 15.) However, it is my understanding that exclusives are playing a greatly reduced role in interactive streaming. (See, *e.g.,* Tim Ingham, "Yes, Lucian Grainge has 'Banned' Streaming Exclusives at UMG. No, It's not all about Frank Ocean," *MusicBusinessWorldWide,* August 25, 2016, *available at* http://www.musicbusinessworldwide.com/yes-lucian-grainge-banned-streaming-exclusives-umg-no-not-frank-ocean/, site visited December 7, 2016.) Moreover, Tidal—a relatively small new entrant—has been one of leaders in seeking exclusives, while Spotify—the largest interactive service—has a policy against them. (Steve Knopper, "How Apple Music, Tidal Exclusives are Reshaping Music Industry," *Rolling Stone,* October 5, 2016, *available at* http://www.rollingstone.com/music/news/inside-the-war-over-album-exclusives-w443385, site visited December 7, 2016.)

investment benefits that will be realized tomorrow. By definition, producing more than the short-run profit-maximizing amount of output will reduce short-run profits. But, what Dr. Rysman fails to acknowledge, is that although over-producing today will reduce short-run profits, it can *raise* short-run *revenues*. Under such circumstances, the concerns raised by Dr. Rysman are irrelevant because the percentage royalty rate is applied to revenues, not profits.

15. To see why deferring profits can accelerate the realization of revenues, note that, at the profit-maximizing outcome, marginal revenue is equal to marginal cost.[19] This fact implies that marginal revenue is positive for a firm, such as a streaming service, that has positive marginal costs.[20] A positive value of marginal revenue implies that expanding output beyond the profit-maximizing output level will at least initially raise short-run revenues. In other words, because the revenue earned on an incremental unit sold at the profit-maximizing output level is positive, increasing output above that level will generate additional revenues and—under the percentage-of-revenue prong of the 2012 Settlement—generate additional royalty payments as well. Dr. Rysman does not acknowledge or account for this possibility.

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[19] See, *e.g.*, Walter Nicholson (1997) *Intermediate Microeconomics and its Applications*, New York: Dryden Press, at 203 ("In order to maximize profits, a firm should produce that output level for which the marginal revenue from selling one more unit of output is exactly equal to the marginal cost of producing that unit of output."); and Robert S. Pindyck and Daniel L. Rubinfeld (2009) *Microeconomics*, Boston: Pearson, at 276-277 ("To maximize profit, the firm selects the output for which the difference between revenue and cost is the greatest. … The rule that profit is maximized when marginal revenue is equal to marginal cost holds for all firms, whether competitive or not.").

[20] I am not aware of any reason to believe that streaming services have marginal costs that are zero or negative, especially when one considers subscriber-acquisition costs.

16. Another flaw in Dr. Rysman's analysis is that he appears to assume that there is something problematical about a business strategy under which a streaming service initially earns relatively low revenues while investing in its business and then later earns high revenues. Dr. Rysman does not take into account the fact that Copyright Owners—as well as the streaming service—benefit when the service successfully invests in building an installed customer base that allows it to make greater sales in the future. This point is most easily seen in the case of an interactive service that invests in building a consumer base in order to maximize the net present value of the service's revenues. By maximizing the net present value of its revenues, the interactive service is also maximizing the net present value of the royalty payments received by Copyright Owners under a percentage-of-revenue royalty structure. In other words, when it comes to choosing whether and by how much to defer revenues, the interests of the interactive service and Copyright Owners are aligned. A similar relationship holds when the interactive service seeks to maximize the expected net present value of its profits, rather than revenues. Specifically, any strategy of deferring revenues to build up a consumer base that increases the net present value of the interactive service's profits will also increase the net present value of the royalties paid under a percentage-of-revenue license.[21]

[21] To see why this relationship holds, consider a simple two-period model. Relative to a situation in which the service maximizes profits in each period independently, the service has an incentive to invest in building up its base of first-period users to promote second-period sales (*e.g.*, by charging less than the myopic, single-period profit-maximizing price) only if doing so increases the net present value ("NPV") of the service's stream of revenues net of royalty payments by more than it increases the NPV of the service's non-royalty costs. This relationship can be stated algebraically. Let ΔR denote the change in

17. Dr. Rysman first attempts to rebut this argument by pointing to revenue displacement.[22] This is, however, a distinct issue from revenue deferral, and I address it below. Dr. Rysman also attempts to downplay the benefits that Copyright Owners receive from streaming services' investments in customer bases by arguing that some streaming services will fail and, thus, Copyright Owners will not enjoy later payments from those services.[23] This argument is flawed because it ignores the fact that failure by some streaming services can be expected to lead to higher revenues for the surviving services as consumers turn to surviving services as substitutes for the services that are no longer available. Thus, there is no reason to think that the failure of some streaming services would significantly reduce the net present value of royalty payments across all services or that Copyright Owners do not benefit overall from streaming services' investments.

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the NPV of the service's revenues due to the deferral, and let ΔC denote the change in the NPV of the service's costs. Lastly, let ρ denote the royalty rate, which is a fraction between 0 and 1. The investment or deferral strategy is profitable for the service only if $(1-\rho)\Delta R > \Delta C$.

Assuming that marginal costs are positive (I am aware of no reason to believe they are not), attracting a greater number of consumers in the first period will raise costs, as will selling to a greater number of consumers in the second period as a result of having a larger installed base of users. Given that costs rise in both periods, the NPV of costs must also rise (*i.e.*, $\Delta C > 0$). Therefore, the service has an incentive to invest in building up its first-period user base only if $(1-\rho)\Delta R > 0$, which implies that $\rho\Delta R > 0$. $\rho\Delta R$ is the change in the NPV of the royalty payments received by rights holders. Hence, the service will invest only if doing so raises the NPV of the royalties paid to rights holders.

22 *Rysman WDT*, ¶¶ 46-48.

23 *Rysman WDT*, ¶¶ 46 and 49.

18. It should also be noted that, although he apparently intends his analysis to apply to advertising-supported streaming services,[24] Dr. Rysman's conclusion that interactive services will forego revenues in order to build up their consumer bases does not apply well to advertising-supported services. By definition, an advertising service generates its revenues from advertisers, and lowering the prices it charges to advertisers would do nothing to generate additional consumers.[25]

2. The Role of Per-Subscriber Minimums

19. Even if Dr. Rysman were correct that there is a "problem" from either the displacement or deferral of revenues, the use of per-subscriber minimums would address it. Indeed, Dr. Rysman submitted substantially similar testimony in *Web IV* on behalf of SoundExchange, and SoundExchange used that testimony to argue for a two-pronged royalty structure that coupled a revenue-based prong with a minimum prong, in that case a per-play minimum.[26]

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[24] Dr. Rysman points to the collection of consumer data as one reason to build up a consumer base, and he identifies such data as being particularly valuable to advertising-supported interactive services. (*Rysman WDT*, § III.C, particularly ¶¶ 22-23.)

[25] Perhaps Dr. Rysman would argue that interactive services reduce their advertising loads below the profit-maximizing level in order to make their services more attractive to subscribers. I am unaware of any evidence that services have done so. As a general matter, reducing ad loads can increase the total amount of advertising revenue both by increasing listening levels and by boosting the value of any given advertisement.

[26] *In re Determination of Royalty Rates and Terms for Ephemeral Recording and Digital Performance of Sound Recordings (WEB IV)*, Docket No. 14-CRB-0001-WR (2016-2020), Introductory Memorandum to the Written Direct Statement of SoundExchange, Inc., October 7, 2014, at 2-6; *In re Determination of Royalty Rates and Terms for Ephemeral Recording and Digital Performance of Sound Recordings (WEB IV)*, Docket No. 14-CRB-0001-WR (2016-2020), Proposed Conclusions of Law of SoundExchange, Inc., June 19, 2015 at 94; *In re Determination of Royalty Rates and Terms for Ephemeral Recording and Digital Performance of Sound Recordings (WEB IV)*, Docket No. 14-

20. Per-subscriber minimums, such as those in the 2012 Settlement, ensure that a service that had low revenues early in the life of the service nonetheless would pay significant royalties to publishers.[27] And a minimum could also be applied when the determination of applicable revenues was too difficult. For example, it is my understanding that [redacted]

21. In fact, Dr. Rysman himself concluded that a per-subscriber, or per-user, fee structure has attractive properties:

- "[P]er-user rates align directly with a critical value in the marketplace, namely access to music. … The user value of having access to music repertoires, separate and apart from whether or how much those repertoires are in fact listened to by the user, seems plain."[28]
- "Per-user rates can also potentially protect against opportunistic manipulation arising from future technological developments."[29]
- "Second, per-user rates can protect against royalty arbitrage from the development of business models that exploit the value access to music without intensive streaming."[30]

CRB-0001-WR (2016-2020), Testimony of Marc Rysman, Ph.D., February 23, 2015, SX Ex. 094-RR.

27 A per-subscriber minimum would also protect publishers if a situation arose in which a streaming service was willing to "gamble" on future success by charging very low prices today in a way that a publisher would not agree to do under conditions of effective competition.

28 *Rysman WDT,* ¶ 58.

29 *Rysman WDT,* ¶ 59.

30 *Rysman WDT,* ¶ 60.

22. Lastly, it should be noted that concerns with measurement issues are not unique to a percentage-of-revenue structure. As Dr. Rysman points out, a per-play royalty structure could also suffer from measurement issues, making it necessary to have a per-user royalty prong in this case as well. Specifically, he identifies reasons why it can be "virtually impossible" or "hard to track" a user's total number of streams.[31] And, to the extent that a single service contains both interactive and noninteractive plays—as SoundExchange argued in *Web IV* has become increasingly common[32]—it could be necessary to determine which play is of which type in order to calculate appropriate royalties.[33] For example, since the launch of the Pandora Plus product, [redacted][34] Ignoring this issue, as the Copyright Owners' proposal does, would result in [redacted] of the Pandora Plus streams being licensed at the wrong royalty rate.[35] Moreover, differentiating between compensable and non-compensable plays may very well raise additional complications. For example, in other circumstances, it may be difficult to define precisely which plays are—and which are not—compensable. It is my understanding from counsel that, unlike with the 2012

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31 *Rysman WDT,* footnote 55.

32 *Determination of Royalty Rates and Terms for Ephemeral Recording and Webcasting Digital Performance of Sound Recordings (Web IV)*, 81 Fed. Reg. 26316, (May 2, 2016) (hereinafter *Web IV Final Determination*), at 26335-36.

33 Under a percentage-of-revenue structure, a service with a greater percentage of noninteractive listening may tend to have lower revenues per subscriber, which would reduce its royalty payments and, thus, reflect its streaming mix even if the service calculated its royalties solely through application of the percentage-of-revenue structure intended for interactive streaming.

34 Written Rebuttal Testimony of Michael Herring, February 15, 2017 (hereinafter *Herring WRT*), ¶ 16.

35 *Copyright Owners' Proposed Rates and Terms,* § II.

Settlement rate structure, there is no history that the parties can turn to for guidance in working through such complications.

B. DR. RYSMAN'S ARGUMENTS REGARDING APPROPRIATE ROYALTY STRUCTURE FAIL TO ACCOUNT FOR RELEVANT COST AND DEMAND CONDITIONS, AND ARE ECONOMICALLY UNSOUND.

23. Dr. Rysman concludes that revenue-based royalties suffer from several problems and, in his view, are inferior to per-play and per-user royalties.[36] Specifically, he argues that, in a "hypothetical free market," the parties would agree to a structure under which royalty payments increase with the number of streams (as would be the case with a per-play royalty structure) and that the per-play rate would be the same for all interactive services.[37]

24. As I will now discuss, Dr. Rysman has made several errors in reaching these conclusions. In analyzing appropriate royalty structures, Dr. Rysman fails to account for either the cost structure of intellectual property or the relevant demand conditions. Moreover, his claims regarding the structure of licensing agreements that private parties would be expected to reach in a free market are contradicted by the very marketplace evidence that Drs. Gans and Eisenach point to as exemplars of "free-market" negotiations.[38]

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36 *Rysman WDT,* § IV.

37 *Rysman WDT,* ¶¶ 36-37 and 56.

38 Dr. Rysman also argues that declining effective per-play rates constitute a "fundamental problem" that could be addressed by switching to a per-play royalty structure. (*Rysman WDT,* ¶ 57.) I address this argument in Section VI.C below and demonstrate that it is neither theoretically nor empirically sound.

1. Dr. Rysman does not appropriately account for relevant cost characteristics of intellectual property and the implications for both royalties and retail prices.

25. Dr. Rysman states that "the CRB must set royalty rates in this market to optimally achieve product availability and the efficient use of resources."[39] In order to determine what royalty structure achieves these goals, it is necessary first to develop an understanding of the relevant underlying cost and demand conditions. The structure and levels of royalty rates influence product availability and efficiency by affecting interactive streaming services' investment incentives and the levels and structures of the prices that the services charge their users. Because "upstream" prices (*i.e.*, royalty rates) affect availability and efficiency through their influence on "downstream" prices (*i.e.*, the fees levied on consumers), it is important to understand the relevant cost and demand conditions both upstream and down. Dr. Rysman never undertakes such an analysis.

26. First, consider upstream costs. The creation and distribution of musical works has a particular cost structure that is unlike that of many other goods: high fixed costs with zero or near-zero marginal costs. In addition, once a piece of intellectual property has been created, the social marginal cost of using that intellectual property (*e.g.*, licensing the rights to stream a musical composition) is zero. This is the case because additional consumption (here, additional streaming) does not require any additional effort on the part of copyright owners (or the songwriters who originally created the musical composition). Dr. Rysman ignores this fact entirely.

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[39] *Rysman WDT*, ¶ 69.

27. In addition to the costs of creation and distribution of musical works, suppliers may incur opportunity costs.[40] Copyright Owners' private opportunity costs of additional streams may also be zero, or very close to it, for at least two reasons. First, consider an increase in the number of people who utilize a streaming service because it has improved the quality of its offering and/or lowered its subscription fee. These incremental consumers may have been people who would not otherwise pay to consume music and have been attracted away from piracy or other activities, such as gaming, from which publishers and songwriters would earn no revenues. The aggregate data showing that streaming has increased music industry revenues supports this conclusion.[41]

28. Second, consider an increase in the intensity of listening by existing subscribers. This increased listening may substitute for activities unrelated to the paid consumption of music. Although Dr. Rysman asserts that "[a] per-play rate signals to services the appropriate cost of increasing streams, whether it is increasing the number of streaming consumers or increasing the number of streams per consumer," he provides no evidence that incremental interactive streaming leads to a decrease in payments for other forms of music consumption.[42] In fact, the evidence is to the contrary and indicates that the all-

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40 Opportunity cost refers to "the value of the best forgone alternative use of the resources employed in that action." (Dennis W. Carlton and Jeffrey M. Perloff (2005) *Modern Industrial Organization*, 4th Ed., Boston: Pearson at 34.) Dr. Gans also argues that opportunity cost is the appropriate cost concept. (See, *e.g., Gans WDT,* ¶ 50.)

41 See, *e.g., Katz WDT,* Figures 1 and 2 and accompanying text.

42 *Rysman WDT,* ¶ 56.

you-can-eat ("AYCE") model of interactive streaming services induces greater exploration and broader consumption of music than would otherwise occur.[43]

29. Another important feature of opportunity costs in this industry is that different types of consumers give rise to different opportunity costs depending on what consumers of each type would do if they were not streaming customers. A recent industry analyst report on which Dr. Gans relied in his initial written testimony states that:[44]

[redacted]

In other words, the opportunity costs of serving these customers through targeted or segmented pricing strategies are very low.

30. Of course, whether or not consumers will be attracted to interactive services depends on consumer tastes, as well as on the prices and features offered by the

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[43] As I noted in my written direct testimony (*Katz WDT,* ¶ 14), a recent research study found that users who switch from an ownership model to an access model increase total music consumption, increase the variety of music consumed, and are better able to discover valued works. The study addresses the issue of unobserved heterogeneity by matching adopters with similar non-adopters using a propensity score constructed from demographic variables. (Hannes Datta, George Knox, and Bart Bronnenberg, "Changing their Tune: How Consumers' Adoption of Online Streaming Affects Music Consumption and Discovery," working paper, Tilburg University, February 9, 2016, at 29.) This study has since been updated. All of the conclusions on which I rely are unchanged. (Hannes Datta, George Knox, and Bart Bronnenberg, "Changing their Tune: How Consumers' Adoption of Online Streaming Affects Music Consumption and Discovery," working paper, Tilburg University, October 19, 2016, at 30.)

Similarly, a study b [redacted] (Spotify Exhibit 43 at 34.)

[44] Lisa Yang, Heath P. Terry, Masaru Sugiyama, *et al.,* "Music in the Air, Stairway to Heaven," Goldman Sachs Equity Research, October 4, 2016 (hereinafter *Goldman Sachs Report*), at 35. (Cited in *Gans WDT,* footnote 39.)

interactive services. Consumers vary widely in terms of their willingness to pay for interactive streaming and other forms of music. Many consumers are unwilling to pay to consume music, while other consumers are willing to pay hundreds of dollars per year. As Dr. Eisenach discusses, there is a wide range of different combinations of downstream prices and features that interactive streaming services offer to consumers in order to attract large numbers of listeners with a wide range of preferences and willingness to pay for music.[45]

31. Now, consider the implications of these cost and demand characteristics. Specifically, consider the implications of the fact that: (a) marginal costs are generally low relative to average costs; (b) opportunity costs vary widely across consumers; and (c) consumers have widely varying willingnesses to pay to consume music. As noted above, there are some actual or potential consumers of interactive services for whom Copyright Owners' opportunity costs associated with interactive streaming are very low. As long as they can earn revenues greater than marginal costs (including opportunity costs), Copyright Owners and interactive streaming services have a joint economic interest in finding ways to attract these consumers. However, because these consumers are also ones who have, to date, exhibited an unwillingness to pay for music, it is very likely necessary to offer them services with low, or even zero, prices (*e.g.*, advertising-supported services).

32. Efficient bargaining would give rise to royalty structures that reflected the low (possibly zero) marginal costs of additional streams and would encourage the

[45] *Eisenach WDT*, ¶ 50.

introduction of new, lower-priced service offerings in order to expand the total economic pie to be shared between content owners and content distributors.[46] A percentage-of-revenue royalty structure does exactly this because a service sees its royalty payments scale with the targeted consumer segment's willingness to pay. Dr. Rysman's criticism of such a royalty structure—a structure that he states might have made sense when both publishers and service owners "had an interest in cultivating the industry"—misses the key point that publishers and service owners continue to have a shared interest in cultivating new service offerings or pricing plans that attract additional consumers to paid music listening.[47]

33. In addition to serving the joint economic interests of Copyright Owners and interactive services, offering a varied menu of downstream products and segmenting the market promotes product availability and the efficient use of resources because it allows the industry to serve consumer segments that are only willing to pay prices that are low but that exceed the costs of serving them.[48] Basing royalties on revenues (which will

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[46] Stated in more formal economic terms, differences in downstream price elasticities of demand across consumer segments lead to differences in upstream elasticities of derived demand, so that a profit-maximizing upstream supplier will find it optimal to charge different prices (*i.e.*, royalty rates) depending on the downstream segment being served.

[47] *Rysman WDT*, ¶ 41 ("Arguably, revenue-based royalty payments appeared to make sense at the dawn of the streaming industry, when the prospects for streaming were unclear and both publishers and services had an interest in cultivating the industry."). Dr. Rysman asserts that this rationale no longer applies. (*Id.*)

[48] In fact, welfare-maximizing prices typically have this characteristic. Prices that maximize consumer welfare subject to the requirement that suppliers earn at least a specified minimum level of profits are known as Ramsey prices. As Dr. Gans observes, under Ramsey pricing, "[p]rices are set such that the markup above costs is inversely proportional to the elasticity of demand. This means that less price sensitive products (*i.e.*, products with low price elasticity) are priced higher." (*Gans WDT*, footnote 25; see

reflect the nature of the underlying service offering) and having different minimums for different service types facilitates the provision of a wide range of product offerings. In summary, Dr. Rysman's assertion that "[t]here is no economic reason why royalty revenue to songwriters and publishers should depend on the pricing model of the service, and thus the price of copyrighted content to services should not depend on the pricing of the service" is incorrect.[49]

34. It is notable in this regard that royalties based on percentages of revenues (and, thus, that to some degree depend on the licensee's pricing model) are common in many industries, particularly when the percentages are relatively low. For example, ASCAP and BMI licensees often pay a percentage of their revenue to secure musical works public performance rights.[50] It is also common for mobile phone manufacturers to pay royalties to patent owners based on a percentage of the average selling price.[51] Similarly, in the healthcare industry, some patent owners license drugs to generic manufacturers in

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also Dennis W. Carlton and Jeffrey M. Perloff (2005) *Modern Industrial Organization*, 4th Ed., Boston: Pearson at 702.)

49 *Rysman WDT*, ¶ 36.

50 For example, over-the-air radio stations pay each of ASCAP and BMI a percentage of their revenues. (BMI Radio Station Blanket/Per Program License Agreement, *available at* http://www.bmi.com/forms/licensing/radio/2012_RMLC_blanket_per_program.pdf, site visited February 9, 2017; ASCAP 2010 Radio Station License Agreement, *available at* https://www.ascap.com/-/media/files/pdf/licensing/radio/2010-radio-station-license-agreement.pdf, site visited February 9, 2017.)

51 Trefis Team, "Why Qualcomm's Royalty Rate Will Continue To Decline," *Forbes*, June 10, 2014, *available at* http://www.forbes.com/sites/greatspeculations/2014/06/10/why-qualcomms-royalty-revenue-will-continue-to-decline/#aad6da82f58d, site visited December 15, 2016. ("The average selling price of mobile phones is lower in emerging markets, which translates to lower royalty revenue per phone (royalties are based on the price of the handset). In Q1 2014, the 3G/4G device ASPs declined by almost 4% sequentially and over 2.3% annually.")

exchange for a percentage of the latter's sales.[52] And there is a percentage royalty component to Stanford University's license for Green Flourescent Protein Mutants.[53]

35. Lastly, Dr. Rysman's own analysis indicates that a percentage-of-revenue structure has beneficial properties. One such property is that a percentage-of-revenue structure promotes downstream pricing that has the desirable feature of increasing consumer benefits. According to Dr. Rysman, "[t]he user value of having access to music repertoires, separate and apart from whether or how much those repertoires are in fact listened to by the user, seems plain."[54] In other words, interactive streaming services give rise to option value. A revenue-based royalty structure facilitates AYCE retail pricing because the service does not pay additional royalties solely because a user has listened to more streams.[55] AYCE pricing is beneficial because it both increases the

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52 See, for example, "Hepatitis-C Drug Launched In India By Biocon," TheIndianPanorama, December 28, 2015, available at *https://www.theindianpanorama.news/topics/biocon-launches-hepatitis-c-drug-in-india-55123/#.WFLzUdUrJEY*, site visited December 15, 2016. ("Biocon entered into a non-exclusive licensing agreement with Gilead Sciences early this year to manufacture and market chronic hepatitis-C medicines, including Sovaldi and Harvoni, for India and 91 other developing countries by paying 7% royalty on sales.")

53 Green Fluorescent Protein (GFP) Mutants, Nonexclusive agreement for all fields of use, *available at* http://techfinder.stanford.edu/technology_detail.php?ID=1339, site visited January 23, 2017. (Non-exclusive agreement for all fields of use: "Earned Royalty. Company will pay Stanford earned royalties of 5% on Net Sales of Licensed Products.")

54 *Rysman WDT*, ¶ 58.

55 [redacted] does have [redacted]. (See, *e.g.*, Agreement Between [redacted], dated September 28, 2015 [redacted]), at A-1. See also, [redacted] This fact is consistent with the economic logic explained in the text because [redacted] In contrast, Spotify's library contains more than 30

option value consumers derive from access to music (because it allows consumers to sample additional music at no additional cost) and collects funds from consumers in a way that tracks that value (*i.e.,* a consumer benefiting from the option pays the subscription fee even if he or she listens to relatively few tracks in a given month). Moreover, while Dr. Rysman commends use of a per-subscriber minimum because it "can protect against royalty arbitrage from the development of business models that exploit the value access to music without intensive streaming,"[56] a revenue-based royalty structure can do the same thing. In summary, a percentage-of-revenue structure for upstream pricing promotes a beneficial form of downstream pricing, which guides music consumption decisions.

2. Testimony by Drs. Eisenach and Gans directly contradicts Dr. Rysman's claims about market outcomes.

36. As noted above, Dr. Rysman asserts that efficient bargaining in a hypothetical free market would lead to outcomes in which a streaming service would pay more per subscriber if the number of streams per subscriber were greater.[57] However, the testimony of Drs. Eisenach and Gans directly contradicts this assertion. Specifically,

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million songs and Apple Music's catalog includes approximately 40 million songs. ("Spotify vs. Apple Music: Which Service Is The Streaming King?" Digital Trends, October 28, 2016, *available at* http://www.digitaltrends.com/music/apple-music-vs-spotify/, site visited February 6, 2017.) [redacted]

56 *Rysman WDT,* ¶ 60.

57 *Rysman WDT*, ¶ 37.

both Drs. Eisenach and Gans testify that the terms under which interactive streaming services license sound recording rights represent free-market outcomes and, indeed, should serve as the principal benchmark in the current proceeding.[58] This fact is notable because the interactive services generally pay royalties to record companies for sound recording rights on a percentage-of- revenue or per-user basis, rather than paying on a per-play basis.[59] In other words, these negotiated agreements do not require streaming services to pay more per subscriber if the number of streams per subscriber is greater.

C. DR. RYSMAN'S COMPARATIVE AND COMPETITIVE ANALYSES OF OWNERSHIP AND ACCESS ARE INCORRECT.

37. In an effort to justify the switch from the rate structure of the 2012 Settlement to that proposed by Copyright Owners, Dr. Rysman incorrectly asserts that digital download

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[58] According to Dr. Eisenach, "license terms for the sound recording rights utilized by the services at issue here are negotiated freely between record labels and the services." (*Eisenach WDT*, ¶ 8.) Similarly, Dr. Gans argues that "the market for non-compulsory licensing of sound recordings provides a model for normal market conditions that should determine statutory mechanical rates." (*Gans WDT,* ¶ 38.)

[59] Some agreements between services and record companies contain per-play royalty prongs but the effective royalty rates typically are based on either the percentage-of-revenue or per-user prongs. (See *In re Determination of Royalty Rates and Terms for Ephemeral Recording and Digital Performance of Sound Recordings (WEB IV)*, Docket No. 14-CRB-0001-WR (2016-2020), Proposed Findings of Fact of SoundExchange, Inc., ¶ 343 (indicating that effective royalty rates "typically result from payment under the percentage of revenue or per-subscriber minimum prongs in those agreements.").)

[redacted]

(Telephonic interview with Nikunj Mistry, Director, FP&A and Subscriptions, Pandora Media Inc., February 14, 2017.) [redacted] *Id.*)

[redacted] (See footnote 55.)

services will be at an unfair or inefficient competitive disadvantage relative to streaming services if the latter pay royalties on either a percentage-of-revenue or per-subscriber basis.[60] In his view, this alleged problem arises because streaming services can "increase the use of licensed music without paying additional royalties (i.e., they can offer their users more consumption without raising the price)."[61] According to Dr. Rysman, "download services cannot operate that way because they must pay a fee for each download."[62]

38. In making this claim, Dr. Rysman fails to account for critical differences in the access and ownership models:

- When a consumer purchases a permanent digital download, he or she is generally free to play that downloaded song as many times as desired and to do so at no additional cost.
- When a consumer utilizes a streaming service, if he or she listens to a song more times, then the number of times that song is streamed increases.

This distinction has a simple but fundamental implication for royalties. In the case of a permanent digital download, there is *no change* in the royalties paid by the download service to music publishers when the consumer listens to the song more times. Similarly, when streaming services pay under the structure of the 2012 Settlement and a consumer has purchased an AYCE subscription streaming service, there is no change in the royalties paid by the streaming service to music publishers when the consumer listens to a

60 *Rysman WDT,* ¶ 51.

61 *Id.*

62 *Id.*

song more times. By contrast, if streaming services were forced to pay royalties on a per-stream basis, then there would be a distortion in favor of permanent digital downloads for those songs that consumers intended to play many times, which presumably are the most economically valuable ones.[63] In short, Dr. Rysman's argument is exactly backwards: the structure of the 2012 Settlement maintains a level playing field, while moving to a per-play rate might give digital download services an inefficient competitive advantage relative to streaming services.

D. DR. GANS'S APPLICATION OF THE EFFICIENT COMPONENT PRICING RULE IS FLAWED.

39. Although he primarily focuses on rate levels, Dr. Gans briefly discusses rate structure as well. In doing so, he appeals to the Efficient Component Pricing Rule ("ECPR") to argue that: (a) royalties should be set at a level that reflects publishers' opportunity costs, and (b) there should not be different rate terms and structures for different business models or products.[64] There are several problems with Dr. Gans's arguments, not least of which is that (a) and (b) are inconsistent with one another when the publishers' have different opportunity costs for different interactive-service business models or products.[65]

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63 Indeed, Dr. Gans asserts that more popular tracks have higher value. (*Gans WDT*, ¶ 24.)

64 The ECPR describes a principle for establishing the prices of (upstream) inputs into a (downstream) product or service. (See, *e.g.*, William Baumol and Greg Sidak (1994) "The Pricing of Inputs Sold to Competitors," *Yale Journal of Regulation*, **11**(1):171-202.)

65 It is because of this inconsistency that I will address point (a) in the present section even though this point might at first blush appear to be solely about rate levels rather than rate structure.

40. Before discussing (a) and (b), I note that Professor William Baumol, one of the leading proponents of the ECPR, has specifically cautioned against using the ECPR to determine what royalties should be paid to songwriters (and publishers):[66]

> Finally, another word must be said about the special scenario upon which the ECPR solution focuses. The underlying story is that of a copyright owner who competes with licensees in a downstream market. But, in the arts, the item covered by copyright does not always serve as an input in any final product market, and holders of such copyrights often have no intention of competing in such a market (e.g., the songwriter who cannot sing). The last case still fits directly into the analysis if the composer forms a partnership with a singer, but that still is surely not the general case. Instead, we can perhaps interpret the scenario hypothetically, as dealing with the prices that would be appropriate if, contrary to fact, the composer were to sing. But perhaps, in such cases in which our scenario does not hold, one must return to Ramsey pricing as the second-best solution.

Indeed, Dr. Gans agrees that "the ECPR model does not apply here in its traditional application, as the rightsholders are not themselves in the market providing products and controlling access to final consumers."[67] However, he nevertheless asserts that "opportunity cost compensation is a basic but critical principle of fair compensation under the ECPR model that should inform the analysis of rates and structures here."[68]

41. It should be noted that the ECPR is not generally recognized by economists as a principle of fairness.[69] Instead, under very specific assumptions that are not satisfied in

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66 William J. Baumol (2004) "The Socially Desirable Size of Copyright Fees," *Review of Economic Research on Copyright Issues*, **1**(1): 83-92, at 91.

67 *Gans WDT*, ¶ 50.

68 *Gans WDT*, ¶ 50.

69 In fact, the ECPR is often criticized for potentially baking in monopoly profits, which are seen by many people as being unfair. (See, *e.g.*, Nicholas Economides and Lawrence J. White (1995), "Access and interconnection pricing: how efficient is the "efficient component pricing rule"?" *The Antitrust Bulletin*, **4**(3): 557-579.

the industry at issue here, the ECPR attains a particular type of efficiency (*i.e.,* efficiency in consumers' choices among alternative sellers).[70] Dr. Gans provides no basis for concluding that royalty rates satisfying the ECPR would constitute reasonable royalty rates that attain the four 801(b)(1) statutory objectives. In addition to offering no guarantee of fairness, the ECPR does not reflect the copyright owners' and users' relative roles (it is based purely on the costs of the owners), and it does not account for any disruption that its implementation might trigger. It also is not the form of pricing that maximizes availability. For example, royalty rates satisfying the principles of Ramsey pricing (an approach that Dr. Gans rejects[71] but Dr. Baumol identifies as an alternative in the quotation above) likely would lead to greater availability.[72]

42. Now consider Dr. Gans's assertion (a) that the ECPR implies that royalty rates should be set at the level of opportunity cost.[73] It is well-established that the ECPR does not imply that pricing at opportunity cost is efficient once the restrictive and unrealistic assumptions underlying the original model are relaxed. For example, under certain

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70 For example, as Dr. Gans himself notes, the ECPR is based on the theory of contestability. (*Gans WDT,* ¶ 46.) The theory of contestability relies on very strong and unrealistic assumptions. See, *e.g.,* Jean-Jacques Laffont and Jean Tirole (2001) *Competition in Telecommunications,* Cambridge: The MIT Press, at 119-124, for a discussion of the effects of relaxing various assumptions of the base ECPR model. See also, Jean-Jacque Laffont and Jean Tirole (1996) "Creating Competition Through Interconnection: Theory and Practice," *Journal of Regulatory Economics,* **10:** 227-256.

71 *Gans WDT,* footnote 25.

72 This conclusion follows from the fact that Ramsey pricing generally entails charging lower prices to those buyers who increase their purchases by the greatest amount in response to a given price decrease (*i.e.,* those buyers whose demand is most price sensitive or price elastic). (*Gans WDT,* footnote 25 ("Prices are set such that the markup above costs is inversely proportional to the elasticity of demand. This means that less price sensitive products (*i.e.,* products with low price elasticity) are priced higher.").)

73 *Gans WDT,* ¶¶ 47-50.

conditions, the ECPR implies that it is optimal to set the royalty rate *below* opportunity cost when the services offered by different distributors are differentiated.[74]

43. Dr. Gans's discussion of the implications of the ECPR for pricing and the use of opportunity costs also misses an important point: as Dr. Gans himself states, there are numerous ways in which consumption of one streaming service may affect the consumption of music distributed in other ways.[75] For example, there are good reasons to believe that significant portions of the consumption of streaming services would otherwise take the form of piracy.[76] Thus, in order to calculate opportunity cost, it is important to have estimates of the degree to which consumers substitute one form of music consumption for another (*e.g.*, estimates of cross-elasticities or diversion rates). However, elsewhere in his testimony, Dr. Gans asserts that cross-elasticities "are… likely to be specific to particular works" and, thus, that those rate-setting principles that rely on these elasticities are "not well suited to the content of setting interactive streaming royalty rates."[77]

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74 See, *e.g.*, Jean-Jacques Laffont and Jean Tirole (2001) *Competition in Telecommunications*, The MIT Press, Cambridge Massachusetts, at 123. See also, Jean-Jacque Laffont and Jean Tirole (1996) "Creating Competition Through Interconnection: Theory and Practice," *Journal of Regulatory Economics*, **10:** 227-256.

75 *Gans WDT*, ¶ 50.

76 For example, according to an analyst report on which Dr. Gans relies, [redacted] [ellipsis in original] (*Goldman Sachs Report* at 36.) See also Written Direct Statement of Will Page, ¶¶ 4-23.

77 *Gans WDT*, footnote 25.

44. Perhaps because of the difficulties of measuring opportunity cost, Dr. Gans only discusses its use in very broad terms. Specifically, according to Dr. Gans:[78]

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

Dr. Gans provides no evidence that publishers are not so compensated by the rates paid under the 2012 Settlement; nowhere does he attempt to calculate the opportunity cost of licensing any interactive streaming services, nor does he make any effort to demonstrate that current rates are not covering the opportunity costs of publishers and songwriters in licensing these services.

45. In fact, an analyst report cited by Dr. Gans suggests that current rates are expected to more than cover the opportunity costs of publishers and songwriters in licensing interactive services. That report predicts that streaming will benefit publishers in the future, with the increase in royalties derived from streaming far outweighing the loss of physical mechanical royalties. Specifically, the report states:[79]

[redacted]

In other words, according to this source, [redacted]

[redacted]

78 *Gans WDT,* ¶ 51.

79 *Goldman Sachs Report* at 57. (Cited in *Gans WDT,* footnote 39.)

46. The benefit of streaming to publishers is also indicated by comparison of the royalty rates for terrestrial radio and interactive streaming services. For example, based on data provided by the NMPA, the average musical works royalty is [redacted] per play for interactive streaming overall and [redacted] per play for advertising-supported interactive streaming services alone.[80] In contrast, the average musical works royalty for terrestrial radio is only $0.00020 per play.[81] As I discussed in my written direct testimony, the per-play rate for permanent digital downloads is also less than the current rates for interactive streaming services.[82]

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80 Calculations based on NMPA00001647.xlsx. These calculations are illustrative. As noted in the next section below, converting percentage-of-revenue rates to per-play rates raise several issues.

81 ASCAP 2015 Annual Report at 27; "Moody's downgrades SESAC's CFR to B3, affirms first-lien credit facilities at B2 and assigns Caa2 to new second-lien term loan; outlook stable," Moody's Global Credit Research, April 7, 2015, *available at* https://www.moodys.com/research/Moodys-downgrades-SESACs-CFR-to-B3-affirms-first-lien-credit--PR_321914, site visited February 9, 2017; "Overall U.S. Radio Industry Revenues Down Slightly to $14.7 Billion in 2015," BIA Kelsey, March 30, 2016, *available at* http://www.biakelsey.com/overall-u-s-radio-industry-revenues-down-slightly-to-14-7-billion-in-2015/, site visited February 13, 2017; "Radio Facts and Figures," News Generation, *available at* http://www.newsgeneration.com/broadcast-resources/radio-facts-and-figures/, site visited February 13, 2017; "The Average American Listens to Four Hours of Music Each Day," Spin, June 19, 2014, *available at* http://www.spin.com/2014/06/average-american-listening-habits-four-hours-audio-day/, site visited February 13, 2017; "Are Broadcast Radio Ad Loads Sustainable?" Xapp Media, March 25, 2015, *available at* https://xappmedia.com/are-broadcast-radio-ad-loads-sustainable/, site visited February 13, 2017; "BMI Announces $1.060 Billion in Revenue, the Highest in Company's History," *BMI*, September 8, 2016, *available at* https://www.bmi.com/news/entry/bmi_announces_1.060_billion_in_revenue_the_highest_in_companys_history, sited visited February 14, 2017; A. Jacobson, "Why Did BMI Go To Court To Set RMLC Rates?" *Radio Business Report*, January 3, 2017, *available at* http://rbr.com/bmi-court-to-set-rmlc-rates/#U27bTahkmbHlXkZu.99, sited visited February 14, 2017; Pandora Q1 2016 Share of Ear study.

82 *Katz WDT*, ¶¶ 109-111.

47. Next, consider Dr. Gans's argument (b) that having a menu of royalty structures and rates will distort competition and argues for a principle of business model neutrality.[83] According to Dr. Gans, "[n]eutrality of this form often arises in normally functioning markets when inputs are supplied freely."[84] However, in making this claim, Dr. Gans fails to fully account for the nature of the costs of intellectual property, where average costs are falling and marginal costs are near zero.[85] In fact, contrary to Dr. Gans' claim, it is common for intellectual property licenses to entail different rates for different uses.[86] Indeed, contracts between interactive streaming services and record companies (negotiated in what Dr. Gans's believes to be a normally functioning market[87]) incorporate different rates for different types of services (*e.g.,* per-subscriber royalty rates applied to family plans are lower than the per-subscriber royalty rates applied to individual plans).[88]

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83 *Gans WDT,* ¶¶ 52-54 and § IV.C.

84 *Gans WDT,* ¶ 54.

85 The example to which Dr. Gans refers—electricity—is irrelevant because electricity has a fundamentally different cost structure. (*Gans WDT*, ¶ 54.) Specifically, many of the costs of providing electricity increase in direct proportion with the amount consumed.

86 Daniel G. Swanson and William J. Baumol (2005) "Reasonable and Nondiscriminatory (RAND) Royalties, Standard Selection, and Control of Market Power," *Antirust Law Journal,* **73**(1): 1-58, at 24 ("Differential pricing of IP licenses for different fields of use is quite common, for example."). See, also, *id.* at 23 ("…we would not expect that 'reasonable' royalties would invariably be uniform and identical across all fields of use, territories, and customers."). I note that the authors were referring to royalties that were "reasonable" in the context of licensing commitments required by a standard-setting organization in order for that body to include a private party's intellectual property within the standard.

87 According to Dr. Gans,"the market for non-compulsory licensing of sound recordings provides a model for normal market conditions… ." (*Gans WDT,* ¶ 38.)

88 See, *e.g.,* [redacted]

48. Lastly, consider the relationship between Dr. Gans's two principles. Dr. Gans's first principle—that prices should be set at the opportunity cost incurred by Copyright Owners in licensing the service—suggests that different services should pay different prices as the opportunity cost varies across different business models and products. Hence, his first principle directly contradicts his second principle that all services should pay the same rates.[89]

III. DR. EISENACH'S ANALYSIS OF RATE LEVELS IS FUNDAMENTALLY FLAWED AND MISLEADING.

49. In my initial written testimony, I explained that there have been no significant changes in industry conditions since the statutory rates that are currently in place were negotiated that would justify an upward adjustment to the headline rates.[90] Indeed, if anything, examination of the relevant industry trends supports a conclusion that the 2012 Settlement headline royalty rate should be lowered for the 2018-2022 period to best achieve the four statutory objectives.[91]

[redacted]

89 Dr. Gans may be attempting to avoid this contradiction in his statement that the ECPR is "agnostic regarding the business activity of [the parties paying the regulated rate] so long as they do not impact on the provider's opportunity costs." (*Gans WDT,* ¶ 53.) However, if Dr. Gans concedes that different streaming business models generate different opportunity costs, and he has no measures of those costs, then his second principle becomes almost vacuous.

90 *Katz WDT,* § IV.C.

91 *Id.*

50. By contrast, the economic experts retained by Copyright Owners all argue for substantial rate increases. In the present section, I discuss Dr. Eisenach's analysis.

A. OVERVIEW OF DR. EISENACH'S APPROACH

51. Dr. Eisenach presents a benchmark analysis based on the royalties paid by interactive services to record companies. At the most fundamental level, his approach seeks to determine what he calls the free-market *mechanical* rate paid by interactive services for musical works by subtracting the free-market *performance* rate paid by interactive services for musical works from the free-market *total* (*i.e.*, public performance plus mechanicals) rate paid by interactive services for musical works. Expressed as a formula:

free-market mechanical rate paid by interactive services for musical works	=	free-market total rate paid by interactive services for musical works	–	free-market performance rate paid by interactive services for musical works

According to Dr. Eisenach, the free-market values cannot be directly observed in the data because various forms of governmental intervention distort current royalties. Hence, in his view, it is necessary to develop proxy measures or estimates.

52. Consider, first, his proxy for the free-market total rate paid by interactive services for musical works. Dr. Eisenach estimates what he considers to be the free-market value of the total royalty rate that would be paid by interactive services for musical works by identifying what he considers to be the effective total rate paid by interactive services for

sound recordings and attempting to convert his benchmark sound recording royalty rate into a *musical works* royalty rate. To do so, he divides by a conversion factor, or *adjustment ratio,* that he asserts represents a meaningful relationship between the values of sound recordings and musical works. Expressed as a formula:

proxy free-market total rate paid by interactive services for musical works	=	total rate paid by interactive services for sound recordings	÷	adjustment ratio

53. Next, consider Dr. Eisenach's approach to estimating the free-market performance royalty rate paid by interactive services for musical works. He applies two methods:[92]

- *Method 1:* Dr. Eisenach uses the performance rate paid by *noninteractive* services for *sound recordings* as a proxy for the performance rate paid by *interactive* services for *musical works.* Here, too, he applies the adjustment ratio in an attempt to convert the value for sound recording royalties into the value of

[92] Dr. Eisenach describes his two methods as follows:

> Method 1 is to identify the implicit value of the mechanical works right for sound recordings in interactive services by subtracting the statutory performance right value for non-interactive services from the all-in sound recording right for interactive services, and then adjust for the relative value of sound recordings and musical works.

(*Eisenach WDT,* ¶ 140.)

> Method 2 is to derive an all-in musical works value based on the relative value of sound recordings to musical works and then remove the amount of public performance rights paid for musical works, leaving just the mechanical-only rate.

(*Eisenach WDT,* ¶ 142.)

In the Section A of the Technical Appendix, I demonstrate that the formulas that I discuss in this section are equivalent to Dr. Eisenach's formulas.

musical works royalties, but he does not make any adjustment to account for any differences between interactive and noninteractive services:

proxy free-market performance rate paid by interactive services for musical works	=	performance rate paid by noninteractive services for sound recordings	÷	adjustment ratio

- *Method 2:* Dr. Eisenach estimates the performance rate paid by interactive services for musical works by analyzing a sample of royalty payments made by certain interactive services under a percentage-of-revenue royalty structure, which he then converts into what he argues is an equivalent per-play rate:

free-market performance rate paid by interactive services for musical works	=	estimated actual performance rate paid by interactive services for musical works

54. Dr. Eisenach's analysis is fundamentally unsound and unreliable. At each stage of his analysis, Dr. Eisenach makes unwarranted assumptions, fails to account for significant market-power problems, and/or selectively excludes data, all with the result of artificially inflating the value of the musical works mechanical royalty rate that he claims interactive services should pay. More specifically, Dr. Eisenach's approach requires that he estimate three empirical values, and each estimate suffers from fatal flaws:

- *The total royalty rate paid by an interactive service for sound recordings:* The percentage royalty rates paid by interactive services for sound recordings are biased upward by the exercise of record company market power and the Cournot Complements Problem.[93] Moreover, Dr. Eisenach's approach is internally inconsistent: if his conclusion that the current royalty rates for musical works are below the "free-market" levels were correct, then it would follow from the economics of bargaining that the current royalty rates for sound recordings are above their free-market levels because the services and record companies are negotiating to divide an inflated pool of economic surplus. This upward bias is compounded by Dr. Eisenach's: (a) use of a biased sample of services; (b) use of a biased sample time period; (c) failure to correct for ongoing trends; and (d) failure to make an appropriate conversion from a percentage-of-revenue rate to a per-play rate.

- *The adjustment ratio:* Dr. Eisenach's claim that there is a universal relative "value" of sound recordings to musical works lacks any foundation in sound economics, as he concedes. Indeed, his attempts to estimate this ratio demonstrate that there is no universal relative value: he estimates that, in different settings, the ratio has ranged from [redacted] to [redacted] With respect to the two ratios

93 *Katz WDT*, ¶ 93 ("By logic first identified by Antoine Cournot in 1838, firms offering complementary products tend to set higher prices than would even a monopoly seller of the same products. This phenomenon arises because a monopoly seller of two complementary products would internalize the fact that lowering the price of one product would increase sales of both products, whereas a seller that internalizes the benefits of only one of the products has less incentive to lower the price.").

that Dr. Eisenach asserts are the most informative—those he derives from certain agreements between publishers and YouTube and Pandora—Dr. Eisenach's calculations rely on poorly supported numbers and an unsound econometric analysis.

- *Estimated performance rate paid by interactive services for musical works:* As an initial matter, Dr. Eisenach's two methods for estimating performance royalties paid by interactive services for musical works are inconsistent with one another. In addition, each approach is flawed. Dr. Eisenach's Method 1 relies on the same sound-recording-to-musical-work adjustment ratio that, as just discussed, is unsupported and unreliable. His Method 2 uses a biased sample to calculate the performance rate paid by interactive services for musical works. Moreover, Method 2's use of data for musical works performance royalty rates is inconsistent with Dr. Eisenach's claims elsewhere in his testimony that these royalty rates have been suppressed below free market rates by rate courts.

Below, I examine each of these flaws in greater detail, in turn.

B. DR. EISENACH'S CALCULATION OF THE TOTAL ROYALTIES PAID BY INTERACTIVE STREAMING SERVICES FOR SOUND RECORDING RIGHTS IS UNRELIABLE AND BIASED UPWARD.

55. The estimated total rate paid by interactive services for sound recordings utilized by Dr. Eisenach is inappropriately high for multiple reasons.

1. The sound recording performance royalty rate for interactive services is distorted upward.

56. Even holding aside sampling issues that I examine below, the starting point of Dr. Eisenach's analysis—his estimate of the sound recording royalty rate paid by interactive services—is distorted upward. This is the case because: (a) the rates negotiated between record labels and interactive services are inflated as a result of record company market power and the Cournot Complements Problem, and (b) Dr. Eisenach failed to adjust for differences between percentage-of-revenue and per-play royalties or to account for downward trends in effective per-play royalties paid by interactive services to record companies. In addition, there is an internal inconsistency in the way Dr. Eisenach uses the sound recording royalty rate paid by interactive services that he never confronts. When this inconsistency is addressed, the sound recording royalty rate paid by interactive service must be adjusted downward, resulting in a lower estimate of a reasonable musical works mechanical royalty rate.

a) The sound recording performance royalty rate is distorted upward by the exercise of record company market power and the Cournot Complements Problem.

57. According to Dr. Eisenach, "license terms for the sound recording rights utilized by the services at issue here are negotiated freely between record labels and the services."[94] If by "freely," Dr. Eisenach simply means that these are arms-length agreements then I agree, but his point is largely irrelevant. If, on the other hand, Dr.

[94] *Eisenach WDT*, ¶ 8.

Eisenach is suggesting that these rates were negotiated under effectively competitive conditions, which is the relevant question, then I very much disagree.

58. As the Judges found in *Web IV*, the major record companies possess and exercise substantial market power in the upstream market in which they license sound recording performance rights to interactive services.[95] As a result, and as the Judges in *Web IV* concluded, the royalty rate paid by interactive services to major record companies is distorted upward.[96] Indeed, due to the Cournot Complements Problem, the prices negotiated in this upstream market are likely higher than monopoly levels.[97] When the U.S. Federal Trade Commission evaluated the merger between Universal Music Group and EMI Recorded Music, it concluded that each major label was a "must have" to an interactive service and that the major labels are "more complementary than

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95 *Web IV Final Determination* at 26368.

96 Specifically, the Judges found:

> Because the Majors could utilize their combined market power to prevent price competition among them by virtue of their complementary oligopoly power… the Judges must establish rates that reflect steering, in order to reflect an 'effectively competitive' market.

(*Web IV Final Determination* at 26368). Further the Judges did not find that:

> the mere size of the Majors or their share of the noninteractive market is in itself anticompetitive (especially on this record), but the Judges find that the ability of the Majors to leverage that market power to create the complementary oligopoly pricing problem can neither be imported into the noninteractive market nor assumed to be part of the hypothetical effectively competitive noninteractive market.

(*Id.* at 26374).

97 *Katz WDT*, ¶ 93.

substitutable."[98] These are precisely the conditions under which the Cournot Complements Problem arises.[99]

59. Ultimately, in *Web IV,* the Judges concluded that "the interactive services market is *not* effectively competitive."[100] This was the case for a number of reasons. First, interactive services have a limited ability to play one record label off against another to mitigate the effects of record label market power and the Cournot Complements Problem. Second, certain agreements between record labels and interactive services explicitly prevent the service from playing one label off against another (through so called "anti-steering" provisions). Many of these provisions are still in place today.[101] Third, in *Web IV*, the major record companies admitted that they never offer lower royalty rates in an effort to compete with rivals.[102] Dr. Eisenach has not presented any evidence that would call into question any of these conclusions, nor has he attempted to make any adjustment to account for the exploitation of market power by the major record companies.

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98 Statement of Bureau of Competition Director Richard A. Feinstein *In the Matter of Vivendi, S.A. and EMI Recorded Music*, FTC, September 21, 2012, attached hereto as Pandora Reb. Ex. 1.

99 *Katz WDT,* ¶ 93.

100 *Web IV Final Determination* at 26344 (emphasis in original).

101 See, *e.g.*, [redacted]
See also *Web IV Final Determination* at 26342.

102 *Web IV Final Determination* at 26341-42. See also *Web IV Final Determination* at 26344 ("the Judges cannot ignore the testimony from several record company witnesses, discussed in this determination, in which they acknowledged that they never attempted to meet their competitors' pricing when negotiating with interactive services.")

60. Dr. Eisenach's use of a benchmark that is inflated by market power is directly at odds with the 801(b)(1) objectives. For example, as I discussed in my direct testimony, under a leading economic conception of fairness, "a fair return to a copyright owner and a fair income to a copyright user are the return and income that would arise in an *effectively competitive market* in the absence of a mandatory licensing requirement."[103] Similarly, "*effective competition* or bargaining by parties with comparable bargaining power would reflect relative contributions and costs."[104] Indeed, the Judges have previously determined that the possession and exercise of significant market power is inconsistent with the full attainment of the statutory objectives.[105]

b) Dr. Eisenach fails to account for the downward trend in per-play royalties paid by interactive services to record companies.

61. Dr. Eisenach compounds the upward distortion in sound recording royalties by failing to account for important differences in the forms of the two royalty structures.[106]

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103 *Katz WDT*, ¶ 10, emphasis added.

104 *Katz WDT*, ¶ 10, emphasis added.

105 Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services, 73 Fed. Reg 4080 (January 24, 2008), at 4094:

> We agree with Dr. Ordover that 'voluntary transactions between buyers and sellers as mediated by the market are the most effective way to implement efficient allocations of societal resources.' Ordover WDT at 11. An effective market assures absence of both below-market prices and supra-competitive prices, so that suppliers will not reduce output and innovation in response to the former and consumers will not experience a reduction in consumer welfare in response to the latter. In other words, an effective market determines the maximum amount of product availability consistent with the efficient use of resources.

106 Dr. Eisenach inappropriately dismisses the need to account for differences in the form of royalty payments. (*Eisenach WDT*, ¶ 145 ("from an economic perspective, the most relevant and reliable information is not the schedule of prices that may have been agreed

Most important, Dr. Eisenach fails to adjust for time trends present in the per-play rates that he derives from the percentage-of-revenues payments made by interactive services to record companies.

62. Dr. Eisenach derives effective per-play rates by "tally[ing] the total payments for sound recordings and divid[ing] by the total number of interactive streams the service reports."[107] Even if one accepted Dr. Eisenach's sample of services as appropriate (which, as I will discuss below, it is not), one would still need to account for the ongoing decline in these rates over time.[108] This failure to account for the ongoing decline in effective per-play royalty rates stands in stark contrast to Dr. Eisenach's approach elsewhere in his testimony, where he does attempt to account for time trends, albeit in an unreliable manner.[109] Indeed, here he does not even use the most up-to-date data available.[110]

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to but rather the price actually paid.").) As general matter of economics, the *schedule* of prices is critical for understanding risk allocation and incentive generation.

107 *Eisenach WDT,* ¶ 148. Examination of the data underlying Dr. Eisenach's calculations indicates that these data exclude non-compensable plays (*i.e.*, short plays known as skips). Thus, the reported effective per-play rates are per-compensable-play rates.

108 This point was made in the *Web IV* decision:

> Third, the Judges also criticized Dr. Pelcovits in the *Web III Remand* for failing to adjust for the downward trend in rates in the interactive benchmark market. Id. Both Dr. Pelcovits and Dr. Rubinfeld used periods ending during the year in which the proceeding started (2009 and 2014 respectively). Dr. Pelcovits used an 18-month period, while Dr. Rubinfeld used a 12-month period… However, Dr. Rubinfeld acknowledged – but failed to account for – the continuing downward trend in his interactive benchmark rates.

(*Web IV Final Determination* at 26353, footnote 116.)

109 *Eisenach WDT,* ¶¶ 126-129 and Figure 13.

110 Dr. Eisenach typically uses data from 2015. (See, *e.g., Eisenach WDT,* Table 11.)

63. The ongoing [redacted] in the effective per-play rate paid by interactive services to record companies can be seen in data utilized by Dr. Rysman.[111] As Figure 1 below shows, the average sound recording royalty payment per-play generally [redacted] over the five-year period from 2012 to 2016.[112]

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111 *Rysman WDT* and backup materials (NMPA00001670.xlsx). The 2016 data comprise [redacted]

112 One could also conduct a statistical analysis to project these data, using an approach similar to the one that Dr. Eisenach adopted for his analysis of certain Pandora agreements. (*Eisenach WDT*, ¶ 127) This approach predicts that the average sound recording royalty payment will fall from [redacted] See backup materials.) Dr. Eisenach uses a linear trend in his analysis of Pandora's agreements. Using a linear trend in this analysis would project negative sound recording royalty payments to record labels by 2019. Thus, for purposes of the analysis reported here, I use an exponential trend to model the non-linearity in the observed data and prevent negative forecasts of sound recording payments. I report these results only for completeness. As is Dr. Eisenach's analysis of the Pandora agreements, the statistical projection summarized in this footnote is based on too few data points to be reliable.

Figure 1: Sound Recording Royalty Payments to Record Companies per 100 Plays [RESTRICTED]

64. In addition to demonstrating that Dr. Eisenach's benchmark sound recording per-play rate is too high, the fact that per-play rates have been falling while percentage-of-revenue rates have remained constant shows that conversion of one into another is not straightforward. Rather than attempt such a conversion from percentage-of-revenue rates to per-play rates—which, done properly, would require an adjustment to account for the differences in the royalty structures—it is more straightforward to rely on the explicit per-play prong of the interactive agreements, as was done by the Judges in *Web IV*, in order to ensure comparability. As I demonstrate below, had Dr. Eisenach taken such an

approach, his analysis would have resulted in dramatically lower estimates of reasonable musical works mechanical royalty rates.

c) Dr. Eisenach's analysis is internally inconsistent.

65. Dr. Eisenach concludes that, due to the compulsory mechanical license[113] and the rate court oversight of performance royalties,[114] the current royalty rates received by publishers are well below the levels that would obtain under the "free-market" rate-setting that serves as his conceptual ideal. Dr. Eisenach ignores the implications that his conclusion regarding musical works royalties paid by interactive services has for his use of the sound recording royalty rate paid by those services. Had he done so, he would have found that his approach is internally inconsistent.

66. Suppose, solely for the sake of argument, that Dr. Eisenach is correct that publishers would receive higher royalty rates under an appropriate market outcome. Then the economics of bargaining imply that record companies would receive *lower* sound recording royalty rates. It is thus internally inconsistent for Dr. Eisenach to base his claim that publishers should receive higher royalty rates on the current sound recording royalty rates.

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113 *Eisenach WDT,* ¶ 126 and Table 8 (arguing that, in the absence of the shadow of a compulsory license, the "equilibrium, market-based" rates in certain Pandora licensing agreements that he examines would have resulted in an adjustment ratio of [redacted] which implies a mechanical royalty rate of [redacted] per play using Dr. Eisenach's approach of taking the average of the Pandora adjustment ratio and his estimate of the YouTube adjustment ratio and then applying his Method 2). See also *id.* ¶¶ 153, 158, 165 (deriving estimates of what Dr. Eisenach characterizes as the "appropriate value" of the musical works mechanical royalty rates that substantially exceed the current statutory rate).

114 *Eisenach WDT,* ¶¶ 106-110 (arguing that royalty rates for musical works performance rights have been suppressed).

67. To see the source of the inconsistency in greater detail, consider the bargaining between record companies and interactive services. When record companies and interactive services bargain over royalty rates, they are bargaining over how to divide the surplus (*i.e.*, economic profits) available to them if they reach agreement. That surplus will be equal to the total revenues generated by the streaming of the record companies' songs minus the amounts paid to other suppliers of necessary inputs (*e.g.*, server manufacturers and, critically, music publishers). The more that is paid to the other input owners, the less surplus to be divided between the streaming services and record companies, and—all else equal—the lower will be the royalties paid to record companies by interactive streaming services. Stated in the other direction, all else equal, the lower the payments made to music publishers, the greater the level of surplus split between the services and record companies and the higher the resulting royalty rate paid to the record companies by interactive services. Therefore, if the royalties paid to music publishers are artificially suppressed, then the royalties negotiated by record companies will be artificially inflated.[115]

68. Dr. Eisenach makes no adjustment for this upward bias. Indeed, Dr. Gans concludes that it is impossible to make a reliable adjustment.[116] Although it is difficult to determine the appropriate adjustment, it is potentially significant. For example, under Nash bargaining between services and record labels, 50 percent of the difference between Dr. Eisenach's recommended mechanical royalty rate and the actual mechanical royalty

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115 In Section IV.C.3 below, I address this point formally using the Shapley value approach taken by Dr. Gans.

116 *Gans WDT,* footnote 40.

rate would express itself in higher royalty payments to the record labels.[117] Thus, if services currently pay mechanical royalties for musical works equal to approximately [redacted] per user per month,[118] then the Copyright Owners proposal of $1.06 per user per month[119] suggests that recording royalties are elevated by approximately [redacted] per user per month (50 percent of the difference between [redacted] and $1.06). Dr. Eisenach asserts that the correct mechanical royalty rate could be as high as [redacted] per user per month, in which case the distortion in Dr. Eisenach's estimate of recording royalties would be even larger: [redacted] per user per month.[120] Using Dr. Eisenach's methodology from Table 18, if Dr. Eisenach believes that the correct mechanical royalty rate is [redacted] per user per month, then he should believe that the correct sound recording royalty rate is [redacted]. Using the ratio of [redacted] that generates Dr. Eisenach's [redacted] estimate implies that the all-in rate per user per month for musical works would be [redacted] and the mechanical royalty rate would be [redacted] per user per month. Note that this last number is inconsistent with Dr. Eisenach's estimated mechanical royalty rate of [redacted]

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117 From the perspective of a negotiation between a service and a record label, royalty payments to publishers are properly viewed as a cost to the service that affects its disagreement profit. Under Nash Bargaining with equal bargaining power, the negotiating parties evenly split the surplus, which is a function of each party's disagreement profits.

118 Based on data underying. *Eisenach WDT,* Table 18. Includes standalone, portable, mixed-use products for Deezer, Rhapsody, and Tidal (data for Google not available).

119 *Copyright Owners' Proposed Rates and Terms* at B-6.

120 *Eisenach WDT*, ¶ 176.

69. As discussed above, Dr. Eisenach's sample excludes important services and products. Consequently, the estimates derived from this sample are unreliable. For example, if one includes data for Spotify's standalone, portable, mixed-use, subscription product in the sample, the average mechanical royalties for musical works is approximately [redacted] per user per month.[121] Compared to this figure, Copyright Owners' proposal of $1.06 per user per month suggests that sound recording royalties are elevated by approximately [redacted] per user per month (50 percent of the difference between [redacted] Including Spotify in the sample and assuming an adjustment ratio of [redacted], Dr. Eisenach's methodology would imply that the correct mechanical royalty rate is [redacted] per user per month, in which case the distortion in Dr. Eisenach's estimate of recording royalties would be even larger: [redacted] per user per month. Using Dr. Eisenach's methodology from Table 18 (but now including Spotify), if the correct mechanical royalty rate is [redacted] per user per month, then the correct sound recording royalty rate is [redacted] Using the ratio of [redacted] that generates [redacted] implies that the all-in rate per user per month for musical works would be [redacted] and the mechanical royalty rate would be [redacted] (= [redacted]) per user per month. Note that this number is inconsistent with the mechanical royalty rate of [redacted] estimated by Dr Eisenach's approach.

70. In order to make Dr. Eisenach's model internally consistent, it is necessary to find the "fixed point" (*i.e.,* the value of the mechanical royalty rate for musical works such that, using that value to derive the all-in sound recording royalty rate that would result

[121] See backup materials.

from bargaining between record companies and interactive services, one would obtain that same value for the mechanical royalty rate for musical works when applying the formula underlying Dr. Eisenach's Table 18 to the newly computed value of the all-in sound recording royalty rate).[122] To see the effects of correcting this particular inconsistency, suppose solely for the sake of argument that the range of adjustment ratios that Dr. Eisenach claims are the most reasonable (*i.e.,* between [redacted] and [redacted] are appropriate.[123] Then an illustrative calculation based on Nash bargaining with a 50/50 split demonstrates that Dr. Eisenach's estimated mechanical royalty rate is between [redacted] than the internally consistent estimate, ignoring for the moment the other problems with his analysis.[124] To the extent that bargaining power is unequally distributed in favor of the record companies, Dr. Eisenach's estimates would be more distorted. For example, if one were to assume that the record companies possess all of the bargaining power and, thus, capture all of the marginal surplus, then the

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122 This approach assumes that the PROs hold the musical works performance royalty rate constant. The algebraic formula for calculating the fixed point value is provided in Section B of the Technical Appendix.

123 The flaws in Dr. Eisenach's derivation of adjustment ratios are discussed in Section III.C below.

124 These percentages are calculated based on the differences between Dr. Eisenach's estimated royalty rates and the internally consistent rates calculated using the fixed point formula derived in Section B of the Technical Appendix with values of [redacted], $\lambda = 0.5$, and V^s equal to [redacted] and [redacted].

If one includes data for Spotify's standalone, portable, mixed-use, subscription product in the sample, then Dr. Eisenach's approach would result in an estimated mechanical royalty rate that is between [redacted] than the internally consistent estimate. These percentages are calculated based on the differences between the royalty rates that Dr. Eisenach's approach would have estimated and the internally consistent rates calculated using the fixed point formula derived in Section B of the Technical Appendix with values of [redacted], $\lambda = 0.5$, and V^s equal to [redacted] and [redacted]

corresponding calculations would indicate that Dr. Eisenach's estimated mechanical royalty rate is between [redacted] for this reason alone.[125, 126]

71. Coupled with the other sources of error described above and below, the potential magnitude of the necessary correction for this one error and the difficulty of determining an appropriate value of the correction constitute a strong rationale for not using recording performance rights as a benchmark.

2. Dr. Eisenach bases his calculations on a biased sample.

72. In calculating his benchmark sound recording royalty rates, Dr. Eisenach relies on a selected subset of data from streaming services. For example, his primary calculations, which exclude data from Spotify, Apple, and other services, rely on data that account for less than [redacted] of industry plays. For the reasons discussed below, Dr. Eisenach's use of a selected subset of the data leads him to incorrect estimates.

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125 These percentages are calculated based on the differences between Dr. Eisenach's estimated royalty rates and the internally consistent rates calculated using the fixed point formula derived in Section B of the Technical Appendix with values of [redacted], $\lambda = 1.0$ and V^s equal to [redacted] and [redacted].

If one includes data for Spotify's standalone, portable, mixed-use, subscription product in the sample, then Dr. Eisenach's approach would result in an estimated mechanical royalty rate that is between [redacted] These percentages are calculated based on the differences between the royalty rates that Dr. Eisenach's approach would have estimated and the internally consistent rates calculated using the fixed point formula derived in Section B of the Technical Appendix with values of [redacted], $\lambda = 1.0$ and V^s equal to [redacted] and [redacted]

126 Dr. Eisenach's approach would be correct *if* the record companies had zero bargaining power. However, such an assumption is clearly untenable.

a) Exclusion of Leading Interactive Services

73. Dr. Eisenach excludes Spotify on the grounds that several record companies hold equity in Spotify and that—according to Dr. Eisenach—Spotify [redacted] as a result.[127] However, Dr. Eisenach's own calculations reveal exactly the opposite: Spotify actually [redacted].[128]

74. The failure of Dr. Eisenach's data to fit his theory is not surprising given the record companies' reported ownership shares: Sony BMG (5.8 percent), Universal Music (4.8 percent), Warner Music (3.8 percent), EMI (1.9 percent), and Merlin (1.0 percent).[129] Given these ownership shares, any given record company would have little economic incentive to [redacted] to increase the value of its equity because the record company would bear the full consequences of the [redacted] but would receive only a small share of the increase in Spotify's equity value. Moreover, Spotify's current contracts with the major record companies became effective in [redacted][130] so that

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127 *Eisenach WDT*, ¶ 150.

128 *Eisenach WDT*, Table 19 [redacted]

129 "Record labels part owner of Spotify," *The Swedish Wire*, *available at* http://www.swedishwire.com/jobs/680-record-labels-part-owner-of-spotify, site visited January 3, 2017. See also, Michael Arrington, "This Is Quite Possibly The Spotify Cap Table," *Tech Crunch*, *available at* https://techcrunch.com/2009/08/07/this-is-quite-possibly-the-spotify-cap-table/, site visited February 13, 2017

130 [redacted]

any [redacted] that might have been associated with the initial equity investments in 2008 would no longer apply.[131]

75. By excluding [redacted] services in his Table 11, Dr. Eisenach omits [redacted] of the royalty payments made to record companies by interactive services in 2015.[132] Similarly, by excluding Spotify's S1 and S3 services, Dr. Eisenach omits [redacted]. In addition, Dr. Eisenach's data do not include Apple Music. Dr. Eisenach's exclusion of the two leading interactive services from his calculations raises strong concerns about the reliability of his conclusions.[133]

[redacted] It is my understanding that the Spotify-Merlin agreement has not been produced.

131 According to Computer Sweden, which had access to Spotify's public financial filings for 2008, equity had been granted to the record companies by then. (Marcus Jerrang, "Documents reveal major labels own part of Spotify," *Computer Sweden,* August 8, 2009, *available at* http://computersweden.idg.se/2.2683/1.240046/documents-reveal-major-labels-own-part-of-spotify, site visited January 3, 2017). It is my understanding that the [redacted] (Spotify USA Inc.'s Memorandum in Opposition to Copyright Owners' Motion to Compel Production of Documents Concerning [redacted], *PhonoRecords III*, January 19, 2017, at 3.)

132 Dr. Eisenach excludes all [redacted] services from his analysis. He also reports a [redacted] which additionally excludes [redacted].

The service types correspond to the service types defined in 37 CFR 385.13 and 37 CFR 385.21. [redacted]

133 "Have Spotify and Apple Music Just Won The Streaming Wars?" Music Industry Blog, September 16, 2016, *available at*

76. Dr. Eisenach's omission of [redacted] from his calculations has a material impact on his conclusions. Specifically, excluding data for [redacted] services [redacted] affects Dr. Eisenach's parameter values in two places. First, [redacted][134] [redacted][135] [redacted] Had he included [redacted] services data in his calculations, Dr. Eisenach's estimated per-play mechanical royalty for musical works would have [redacted] under his Method 1 and from [redacted] under his Method 2.[136] On a per-subscriber basis, the estimated rate would [redacted] under his Method 2.[137]

77. At some points Dr. Eisenach excludes [redacted] (*e.g.*, Table 19) and [redacted] (*e.g.*, Table 17) from his calculations. However, at other points he includes [redacted] (*e.g.*, Table 13) and [redacted] (*e.g.*, Table 15). If he had excluded [redacted] and [redacted]

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https://musicindustryblog.wordpress.com/2016/09/16/have-spotify-and-apple-music-just-won-the-streaming-wars/, site visited February 13, 2017.

134 *Eisenach WDT*, Table 11.

135 *Eisenach WDT*, Table 13.

136 NMPA00001647.xlsx.

137 Dr. Eisenach does not compute a per-user rate using Method 1.

throughout his analysis for consistency (in addition to excluding [redacted] then Dr. Eisenach's estimated per-play musical works mechanical rates would have been approximately [redacted] percent [redacted] (based on either of Dr. Eisenach's Methods 1 or 2) and his estimated per-subscriber musical works mechanical rate would have been approximately [redacted] percent [redacted] (based on his Method 2).[138] If he had excluded [redacted] and [redacted] throughout his analysis for consistency but had included [redacted], then Dr. Eisenach's estimated per-subscriber musical works mechanical rate would have been approximately [redacted] percent [redacted] (based on his Method 2), and his estimated per-play musical works mechanical rates would have been approximately [redacted] percent [redacted] (depending on whether one uses Dr. Eisenach's Method 1 or Method 2).[139] These results raise further doubts about the ability of Dr. Eisenach's approach to yield reliable results.

b) Exclusion of Advertising-Supported Services

78. In addition to excluding Spotify's subscription service, Dr. Eisenach also excludes Spotify's ad-supported service from his analysis. Dr. Eisenach excludes Spotify's payments for its advertising-supported service on the grounds that [redacted][140] He attributes this fact to: (a)

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138 Calculations based on NMPA00001647.xlsx.

139 Calculations based on NMPA00001647.xlsx (calculations include Spotify's advertising-supported service).

140 *Eisenach WDT,* footnote 127 [redacted]. In making this claim, Dr. Eisenach fails to recognize that factors other than the [redacted] also determine the rate differential. One such factor is the use of advertising-supported

the record labels' 17-percent ownership of Spotify, and (b) the use of the advertising-supported services as a means to introduce music listeners to interactive streaming with the intention of migrating them to the subscription service.[141] Factor (a), by itself, would not explain why the royalty rates for the advertising-supported service would be [redacted] to the royalty rates for subscription services, and, as explained above, Dr. Eisenach's arguments regarding the effects of record companies' equity interests on royalty rates are unsound and contradicted by the facts. Factor (b) also provides no sound basis to exclude the royalty rate agreed for advertising-supported services to which the parties agreed. Rather, it is one factor that enters into the determination of a negotiated rate.

79. More generally, Dr. Eisenach asserts:[142]

> … in my opinion it would not be appropriate to base a rate on an average that included non-subscription services. Using a lower, blended rate would risk causing the sort of disruption I have discussed above – a rate that is too low for subscription services could lead to disruptive and distortionary changes in the interactive service segment, but a rate that may be too high for non-subscription services would not, simply because of the asymmetric nature of those risks.

However, the musical works mechanical royalty rate that Dr. Eisenach ultimately concludes is reasonable to apply to advertising-supported services is the *same* rate he proposes to apply to subscription services.[143] I see no sound economic logic for

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interactive services as a gateway to interactive subscription services, which he himself notes. (*Id.*)

141 *Eisenach WDT,* footnote 127.

142 *Eisenach WDT,* footnote 127. See also *Eisenach WDT,* ¶ 31.

143 *Eisenach WDT,* ¶ 174 ("Accordingly, the proposed rates of the greater of $0.0015 per play or $1.06 per user are reasonable terms for mechanical royalties for interactive

excluding data for advertising-supported services from the calculations used to conduct a benchmark analysis that is applied to advertising-supported services. This is an important inconsistency because the exclusion of advertising-supported services from his estimated musical works mechanical royalties matters empirically. For example, including Spotify's subscription and advertising-supporting services, while utilizing a ratio sound recording to musical works rates of 3.2:1, which is the midpoint of the range that Dr. Eisenach reports in Tables 12 (Method 1) and 14 (Method 2), would reduce Dr. Eisenach's estimated value of a reasonable musical works mechanical royalty rate by approximately [redacted] percent (from [redacted] per play to [redacted] per play) under Method 1 and by approximately [redacted] percent under Method 2 (*i.e.*, from [redacted] per play to [redacted] per play).[144]

80. More broadly, the rates on which Dr. Eisenach relies throughout his benchmark analysis vary by business model. Rather than properly take this variation into account, he simply averages them in some cases and excludes them in others.

3. Effects of an Isolated Correction

81. For the reasons described above, Dr. Eisenach's benchmark rate is biased upward. This fact has two implications for benchmark analysis. First, if this benchmark is used, it must be adjusted substantially downward. Second, in part because it needs such an adjustment, the interactive sound recording royalty rate is an inferior benchmark to the

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streaming and limited download services.") The proposed rates make no distinction between advertising-supported and subscription-based services. (See *Copyright Owners' Proposed Rates and Terms* at B-6 - B-8.)

144 Calculations based on NMPA00001647.xlsx. Spotify is the only advertising-supported service for which Dr. Eisenach's backup materials provide comprehensive data.

previous industry-wide settlement for the interactive musical works mechanical royalty rate, which requires minimal adjustment.

82. As described above, in addition to relying on a biased sample, Dr. Eisenach makes no adjustment for either market power or differences in royalty structure. However, such adjustments were made in the *Web IV Final Determination*. If one were going to use interactive service sound recording royalty rates as a benchmark, then a more appropriate approach than Dr. Eisenach's would be to use the methodology adopted by the Judges in *Web IV*. There, the Judges used the per-play rates stated in the agreements between record companies and interactive services adjusted to account for the lack of effective competition among record companies licensing to interactive services.[145] The Judges also adjusted the per-play benchmark rate to reflect differences between interactive and noninteractive services in terms of the degrees of interactivity[146] and the treatments of pre-1972 sound recordings[147] and "skips" (*i.e*, situations in which a consumer listens to only a small fraction of song).[148] In the present proceeding, there is no need to make adjustments for either interactivity or the treatment of pre-1972 sound

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145 *Web IV Final Determination* at 26404-05.

146 The Judges concluded that Dr. Rubinfeld's 2.0 "interactivity adjustment" was "informative" when applied to subscription services. (*Web IV Final Determination* at 26338 and 26344.)

147 *Web IV Final Determination* at 26350 ("interactive services typically paid royalties for pre-1972 recordings, whereas the noninteractive services did not.").

148 *Web IV Final Determination* at 26339, citing SX Ex.17 ¶ 212 (Rubinfeld CWDT) ("under the statute, a "skip," … is considered a royalty-bearing play for a noninteractive service. By contrast, interactive services, pursuant to their direct license agreements with record companies, typically are permitted to exclude from the royalty obligation at least some skips.").

recordings.[149] There is, however, a need to apply an adjustment factor to account for the lack of effective competition and for differences in the treatment of skips. The latter is necessary because Copyright Owners' proposal would levy a per-play royalty fee on every play, while interactive services' license agreements with record companies typically exclude at least some skips.[150] Making the necessary adjustments, the resulting per-play rate is $0.00383.[151] By contrast, Dr. Eisenach uses [redacted].[152] Accepting—for the sake of argument—Dr. Eisenach's relative value parameter of [redacted] and applying it to the rate of $0.00383 per play results in an estimated *all-in* per-play rate for musical works equal to [redacted].

83. Because the figure above is an all-in rate, one must reduce it by the amount paid for musical works public performance rights in order to derive a mechanical-only rate as Copyright Owners propose to do here. For the sake of argument, use Dr. Eisenach's

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149 Musical works performance and mechanical rights have been protected by copyright law since 1897 and 1909, respectively. (Benjamin W. Rudd (1971) "Notable Dates in American Copyright 1783-1969," *Quarterly Journal of the Library of Congress*, **28**(2): 137-143, *available at* https://www.copyright.gov/history/dates.pdf, site visited February 12, 2017.)

150 *Web IV Final Determination* at 26339, citing SX Ex.17 ¶ 212 (Rubinfeld CWDT).

151 In *Web IV,* the Judges adopted a 1.1 adjustment factor for the combined—and partially offsetting—effects of differences in both the treatments of skips and the treatments of pre-1972 sound recordings. (*Web IV Final Determination* at 26350.) In my amended written rebuttal testimony in that proceeding, I used data to identify a 1.2 adjustment factor that accounted solely for the treatment of skips. (*Id.* citing Katz AWRT ¶¶ 101-102.) The figure in the text of my present testimony is based on using a 1.2. adjustment instead of a 1.1 adjustment factor.

Hence, the appropriate benchmark per play rate is $0.003833 = $0.002376 × 0.88 × (1.1 ÷ 1.2) × 2. (*Web IV Final Determination* at 26350, 26404-05 (discussing the interactivity adjustment of 2.0 and indicating that "Dr. Rubinfeld established a subscription-based benchmark rate of $0.002376" which is "reduced by 12% to reflect an effectively competitive rate.").)

152 *Eisenach WDT*, Table 11.

estimate of the effective per-play royalty rate for musical works performance rights of [redacted].[153] Subtracting this amount from the more appropriate estimate of the per-play royalty rate for interactive service sound recording rights yields an estimated per-play musical works mechanical rate of [redacted], which is far below Dr. Eisenach's corresponding estimate of [redacted].[154]

C. DR. EISENACH'S BENCHMARK ADJUSTMENT RATIO IS ARBITRARY AND UNRELIABLE.

84. As described above, Dr. Eisenach uses an adjustment ratio in an attempt to convert sound recording royalty rates into musical works royalty rates. Dr. Eisenach provides no economic basis for determination of the adjustment ratio. Moreover, the ratios he considers reflect various bargaining institutions that do not necessarily track the statutory objectives in the current proceeding. In addition, the ratios reflect the underlying *structure* of the licenses, which can vary across situations. Simply put, there is no reason to assume that there is a constant ratio that can be used across circumstances to convert sound recording payments into payments for musical works. Indeed, Dr. Eisenach's own examination of various ratios demonstrates that there is no such ratio. Specifically, the wide range of ratios cited by Dr. Eisenach is a consequence and confirmation of the unreliability of his approach.

85. Although he ultimately concludes that 1:1 and 4.76:1 are the lower and upper bounds, respectively, on the appropriate ratio sound recording royalties to musical works

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153 *Eisenach WDT*, Table 13 (backup materials). See Section III.D below for a discussion of the issues associated with Dr. Eisenach's calculations of performance royalties.

154 *Eisenach WDT*, Table 14, entry corresponding to the [redacted] adjustment ratio.

royalties, Dr. Eisenach examines ratios ranging from 1-to-1 (synchronization rights based on 50/50 split) to [redacted] and several ratios in between.[155] The wide range of numbers reflects the fact that the ratio is very situation-specific. This latter property is a critical problem for Dr. Eisenach's approach because he offers no principled basis for choosing among the different ratios and the examples on which he relies are generally different than the situation at issue in the present proceeding.

1. Dr. Eisenach provides no principled basis for his approach.

86. Dr. Eisenach asserts that: [156]

> It is not necessary for my purposes to put forward a general theory of relative valuation. In fact, the ability to avoid the assumptions, complexities and uncertainties associated with theoretical debates, and to rely instead on empirical observation of market-based outcomes, is the strength of the benchmarking approach relied upon here. For my purposes, it is sufficient simply to assume that the relative values of the two rights should be stable across similar or identical market contexts.

Although relying entirely on a single unsupported assumption "avoids" paying attention to other assumptions, complexities and uncertainties, it does not eliminate any of them.

87. As Dr. Eisenach admits, "the sound recording rights are perfect complements to the musical works rights: both licenses are required to engage the interactive streaming services covered in Subparts B and C."[157] It is widely recognized in economics that there is no one way to assign economic "value" to one component or the other.

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155 *Eisenach WDT,* ¶¶ 75, 95, 99, and 125.

156 *Eisenach WDT,* ¶ 79.

157 *Eisenach WDT,* ¶ 37.

88. In both theory and practice, the equilibrium ratio in a given marketplace is highly sensitive to a wide range of factors. Dr. Eisenach himself observes that a wide variety of factors can affect the relative values of licensed rights in different situations, including:[158]

> differences in the nature of the rights at issue; differences in underlying market factors (e.g., different geographic markets); differences in the term or time period covered by the agreements; differences in factors affecting the relative bargaining power of the parties (possibly including the presence of the shadow of compulsory licensing); and differences in the services being offered.

89. However, when he applies his methodology, Dr. Eisenach implies that the only factor that matters is the shadow of compulsory licensing:[159]

> A rate in the lower end of this range would reflect a belief that the more accurate estimates of the relative value of musical works would be found in deals negotiated in the shadow of compulsory licensing (or in the compulsory licensing rates themselves), whereas a rate in the upper end of this range would reflect a belief that the relative value of musical works would be found in free market transactions outside the shadow of compulsory licensing.

There is no basis for such a claim. As Dr. Eisenach himself acknowledges, the ratio can vary for a wide variety of reasons and, thus, provides an appropriate input into a benchmark calculation only if either: (a) the circumstances underlying the ratio are similar to the circumstances underlying the rate to be calculated, or (b) a valid adjustment is made to account for material differences between the two circumstances.

90. Moreover, Dr. Eisenach's ratio concept is inconsistent with the testimony of Dr. Gans. Dr. Gans utilizes the concept of the Shapley value to predict the ratio of sound

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158 *Eisenach WDT,* ¶ 35.

159 *Eisenach WDT,* ¶ 153.

recording royalties to musical works royalties.[160] As Dr. Gans correctly states, the Shapley value yields conclusions regarding the "distribution of surplus, not revenue—cost must be deducted from royalty revenue to yield profits."[161] In other words, to the extent that one might expect to see a ratio that is constant across situations in which rights holders have similar bargaining positions, the constant ratio would be for profits, not revenues. Dr. Gans's Shapley value model indicates that the ratio of sound recording to publishing profits should be 1:1.[162] Based on calculations that he believes reflect record companies' and publishers' incremental costs, Dr. Gans concludes that the ratio of revenues should be [redacted][163]

91. By contrast, Dr. Eisenach considers a variety of situations for which the revenue ratio varies over a wide range. The difference between Dr. Gans's single revenue ratio and Dr. Eisenach's wide range of revenue ratios must lead to at least one of three possible conclusions: (a) the data underlying Dr. Eisenach's calculation of the ratio contain significant errors that make it appear that different situations give rise to different ratios when, in fact, they all give rise to the same true ratio; (b) there are large cost differences between record companies and publishers, and these cost differences vary significantly across the different situations examined by Dr. Eisenach; or (c) Dr. Gans's Shapley value model does not apply to the real world situations examined by Dr. Eisenach.

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160 I discuss Dr. Gans's analysis and its flaws in Section IV below.

161 *Gans WDT,* ¶ 73.

162 *Gans WDT,* ¶ 76 ("If publisher royalties were not subject to compulsory licensing but were determined in a free market consistent with outcomes of a Shapley cooperative game, publisher profits would equal label profits from interactive streaming.").

163 *Gans WDT,* ¶ 77.

92. Consider the implications of each conclusion:

- *Conclusion (a):* If the differences are due to errors or noise in Dr. Eisenach's data, then his findings are unreliable, in part because they yield a wide range of values and there is no reason to think that the sample is either representative or evenly distributed around the midpoint.[164]

- *Conclusion (b):* If the large range of ratios is due to widely varying cost relationships, then Dr. Eisenach's findings are unreliable because he offers no meaningful analysis of the cost differences that are driving the ratio differences and, thus, lacks a valid means of comparison or extrapolation to interactive streaming services.

- *Conclusion (c):* Lastly, if Dr. Gans's theory is inapplicable, then neither Dr. Eisenach nor Dr. Gans has provided any logical underpinnings for the use of revenue ratios drawn from other services.

Regardless of which conclusion is correct, it implies that Copyright Owners' experts' analyses lack a sound foundation.

2. Dr. Eisenach's analyses of the YouTube and Pandora agreements are unreliable.

93. Dr. Eisenach examines royalty rates for a variety of different licenses to estimate what he concludes is the ratio of the economic value of sound recording rights to the economic value of musical work rights. He asserts that certain YouTube and Pandora

[164] For further discussion, see Section III.C.3 below.

agreements provide the most appropriate information from which to calculate this ratio.[165] As I now discuss, his analysis of each set of agreements is flawed and/or unreliable.

a) YouTube Agreements

94. Dr. Eisenach derives his YouTube ratio from rates for [redacted] [166] which is:[167]

[redacted] [168] Dr. Eisenach also asserts that it is "widely and publicly reported" that YouTube pays a total of 55 percent of its ad revenue in royalties, implying that [redacted] .[169] These estimates yield a ratio of [redacted] . The estimates of both the sound recording and musical works royalty rates that Dr. Eisenach utilizes in his calculation of this ratio are unreliable.[170,171]

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165 *Eisenach WDT,* ¶¶ 75 and 130.

166 *Eisenach WDT,* ¶ 101.

167 GOOG-PHONOIII00002538 at 2551.

168 *Eisenach WDT,* ¶ 101.

169 *Eisenach WDT,* ¶ 102.

170 In addition to the problems with Dr. Eisenach's analysis discussed below, it should be noted that [redacted] (*Eisenach WDT,* ¶ 101.) This [redacted] limits their usefulness as benchmarks because [redacted]

95. Consider, first, his estimate of the musical works royalty rate. Dr. Eisenach considers only one [redacted].”[172] These agreements contain [redacted].[173] Dr. Eisenach provides no basis to assume that rights for [redacted] are comparable to rights for audio-only content for interactive streaming services. Dr. Eisenach notes, but then otherwise ignores, the fact that [redacted].[174] Because these videos [redacted]." [redacted]—a rate that is [redacted] the publisher rate that Dr. Eisenach uses to calculate his YouTube ratio.[175]

[redacted] given differences in risks borne by record companies and publishers.

171 It is my understanding that, on February 8, 2017, the Judges granted Copyright Owners' motion to compel Google to produce YouTube sound recording license documents, and accordingly, that such documents may become available to me following the submission of my written rebuttal testimony. I reserve the right to supplement or amend my testimony if my opinions change as the result of analyzing any documents that may become newly available to me.

172 *Eisenach WDT,* ¶ 101. According to Dr. Eisenach, [redacted] (*Eisenach WDT,* footnote 93, ellipsis in original.)

173 *Eisenach WDT,* ¶ 100.

174 *Eisenach WDT,* footnote 93. According to Dr. Eisenach, a [redacted] (*Id.*)

175 *Eisenach WDT,* footnote 93.

Although it is my understanding that Google has historically treated "audio-only" videos as covered by Section 115, it does not follow that the resulting ratio of sound recording

96. Next, consider Dr. Eisenach's estimate of the sound recording royalty rate. He relies on publicly available trade press as a basis for asserting that "YouTube generally pays content providers a total of 55 percent of ad revenue."[176] He then subtracts [redacted] percent from 55 percent to estimate that record companies receive [redacted] percent of advertising revenues. However, there are reasons to question whether this characterization is accurate generally and whether it pertains to the [redacted] that Dr. Eisenach is analyzing. As in initial matter, the sources he cites refer specifically to the [redacted], which applies to rights holders, not users posting videos in which they have used copyrighted recordings by others.[177] As a

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royalties to musical works royalties is too high as the result of the existence of a compulsory license. The musical works royalty rate is equal to a regulated rate that is set to reflect effective competition. Although there is generally a concern that record company market power results in sound recording rates that are greater than effectively competitive rates, Copyright Owners argue that there is an offsetting factor in the case of YouTube. Specifically, witnesses for Copyright Owners contend that the safe-harbor provisions of the Digital Millennium Copyright Act give YouTube a particularly strong bargaining position. (See, *e.g.,* Witness Statement of Gregg Barron, October 28, 2016, ¶ 58; Witness Statement of Peter Brodsky, October 28, 2016, ¶ 108; Witness Statement of Justin Kalifowitz, October 28, 2016, ¶ 46; Witness Statement of David Kokakis, October 28, 2016, ¶ 102.)

176 *Eisenach WDT*, ¶ 102.

177 *Eisenach WDT*, footnote 95 (citing [redacted])

result, it appears that Dr. Eisenach's sources do not address the amount that YouTube pays content owners for [redacted] he is analyzing. In addition, one of the news articles that Dr. Eisenach cites as his basis for the 55-percent estimate states that YouTube:[178]

> will give partners 100% of the revenue for ad inventory they sell that exceeds YouTube's rate card. That means all partners now will get 55% of ad revenue up to that CPM (cost per thousand impressions) threshold, with everything above that returning to the content owner.

This fact implies that the effective payment to content owners may be greater than 55 percent, which would increase the ratio, all else equal. Moreover, even if the average payment to content owners is 55 percent of revenue, Dr. Eisenach does not provide any support for his assumption that the payments to content owners for the [redacted] he is analyzing are equal to 55 percent. Lastly, Copyright Owner's own witnesses cast doubt on whether Mr. Eisenach's assumption that YouTube pays content owners a total of 55 percent of its ad revenues is correct. For example, Mr. David Kokakis,

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For a description of the criteria for monetizing video, see "YouTube Partner Program overview," *YouTube Help*, *available at* https://support.google.com/youtube/answer/72851?hl=en, site visited February 7, 2017. According to YouTube, "Songs or pieces of music that aren't eligible for revenue sharing" and "Music (including cover songs, lyrics, and background music)" may not be eligible for monetization "without the explicit permission of the person who created or produced all material."

178 Todd Spangler, "YouTube Standardizes Ad-Revenue Split for All Partners, but Offers Upside Potential," *Variety*, November 1, 2013, *available at* http://variety.com/2013/digital/news/youtube-standardizes-adrevenue-split-for-all-partners-but-offers-upside-potential-1200786223/, site accessed February 1, 2017 (cited in *Eisenach WDT*, footnote 95).

Executive Vice President/Head of Business & Legal Affairs, Business Development and Digital, Universal Music Publishing Group testified that:[179]

[redacted]

Similarly, Mr. Peter Brodsky, Executive Vice President, Business and Legal Affairs at Sony/ATV Music Publishing LLC, testified that:[180]

[redacted]

97. As explained above, [redacted]. If one accepts Dr. Eisenach's assumption that YouTube pays content providers a total of 55 percent of advertising revenue, then the resulting sound recording royalty rate is [redacted]. The resulting adjustment ratio would be [redacted] rather than the [redacted] ratio computed by Dr.

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179 Witness Statement of David Kokakis, October 28, 2016, ¶ 101 (internal references omitted).

180 Witness Statement of Peter Brodsky, October 28, 2016, ¶ 107. See also Witness Statement of Gregg Barron, October 28, 2016, ¶ 57; Witness Statement of Justin Kalifowitz, October 28, 2016, ¶ 47.

Eisenach.[181] This large difference again demonstrates the unreliability of Dr. Eisenach's approach, and serves as yet another reason for instead utilizing the 2012 Settlement as a benchmark for rate setting.

b) Pandora Agreements

98. Dr. Eisenach examines certain Pandora licensing agreements, including some agreements negotiated directly between Pandora and certain publishers that had attempted partially to withdraw from the performance rights organizations ("PROs") so as to be able to license particular services, including Pandora's then-noninteractive service, free of any oversight from the ASCAP and BMI Rate Courts.[182] According to Dr. Eisenach:[183]

> the behavior of the market participants indicates that for much of the period from early 2011 through August 2016 they believed there was a reasonable probability that the licenses for digital sound recording rights could be negotiated directly between Pandora and publishers, outside the purview of the rate courts. The agreements negotiated during this period are thus useful as benchmarks (albeit still under the shadow of *potential* rate regulation) for the value of musical works rights which can be compared to the value for non-interactive sound recording rights established by the CRB under Section 114.

99. Prior to the efforts of certain publishers to partially withdraw from ASCAP and BMI, the ratio of Pandora payments for sound recordings to those for musical works was

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181 A Goldman Sachs report on which Dr. Gans relies estimates a ratio of [redacted] based on the assumption that the average payment to content owners is [redacted] percent and the average payment to music publishers is [redacted] percent. (*Goldman Sachs Report* at 25 ("[redacted]".) (Cited in *Gans WDT,* footnote 39.)

182 *Eisenach WDT*, § V.D.

183 *Eisenach WDT,* ¶ 115.

[redacted]. Dr. Eisenach rejects this ratio on the theory that these rates fell under the shadow of the compulsory license. He instead prefers the ratio based on royalty rates that emerged during the time in which publishers were able to secure relatively higher payments as a result of getting out from under the oversight of the ASCAP and BMI rate courts while the rates paid by Pandora for sound recording performance rights were still subject to regulatory oversight. As a result, the ratios that Dr. Eisenach finds most probative are those that compare regulated rates for sound recordings to an unregulated rates for musical works. As I now discuss, this comparison is unsound.

100. Dr. Eisenach rejects the [redacted] ratio on the basis that the rates are regulated.[184] But considering a situation in which both sets of rates are regulated makes more sense than taking ratios of regulated to unregulated rates. By taking the ratio of two regulated rates, one is taking the ratio of two rates each of which is intended to be equal to what would obtain in an effectively competitive market. By contrast, looking at a ratio for which the numerator is a regulated rate and the denominator is an unregulated one may lead to an artificially low adjustment factor. To the extent that, by getting around the oversight of the rate courts, the publishers were able to leverage their market power in negotiating with Pandora, the resulting rates would be above the level that would emerge in an effectively competitive market, perhaps significantly so. Because these inflated rates constitute the denominator of the Dr. Eisenach's adjustment factor, the resulting ratio of sound recording to musical works royalties would be artificially depressed by the exercise of publisher market power. The dramatic rate increases secured by the

184 *Eisenach WDT*, ¶¶ 125-126.

publishers over this period is consistent with the exercise of publisher market power. As a result, the ratio of regulated rates paid for sound recordings to the unregulated—and likely supra-competitive—rates paid for musical works is uninformative for the task at hand in the absence of a valid correction for the exercise of market power by the publishers during this period.

101. In addition to relying on artificially depressed ratios, Dr. Eisenach uses an unsound analysis in an effort to project how the ratio of sound recording to musical works royalty payments would allegedly change over time. To perform this analysis, Dr. Eisenach compares how the observed ratio changed over time— in 2012 to in 2018 (based on agreements currently in effect)—and projects this trend forward by assuming that will continue linearly.[185] This analysis is flawed for two primary reasons. First, the assumption that the ratio will continue is belied by the facts. Second, the statistical analysis that Dr. Eisenach employs is itself unreliable.

102. The ratio of the royalties paid by Pandora for the performance rights for the recordings and compositions from in 2012 to in 2018.[186] Dr. Eisenach undertakes a statistical analysis by which he projects this trend forward and concludes that the ratio will average over 2018-2022.[187] As I will now discuss, this trend analysis is unsound.

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185 *Eisenach WDT,* ¶ 104 and Table 8. Note that in ¶ 104, Dr. Eisenach appears to have a typographical error by reporting

186 *Eisenach WDT,* ¶ 104 and Table 8.

187 *Eisenach WDT,* ¶ 104.

103. With respect to the facts, Dr. Eisenach does not provide any sound basis for expecting trends to continue.[188] As Michael Herring, President and Chief Financial Officer of Pandora Media, Inc., testifies, whereas historically Pandora paid record labels royalties for its advertising-supported, noninteractive service on per-play basis and paid music publishers based on percentage of revenues, Pandora's most recent agreements with major music publishers and prominent independent music publishers specify that Pandora will pay music publisher royalties for its advertising-supported noninteractive service as a percentage of the royalties paid to record labels.[189] This *one-time* shift in the royalty rate structure required a one-time conversion in the royalty rate levels. Within the current agreements with these music publishers, Pandora negotiated to pay [redacted] (which implies a ratio of [redacted]) for its advertising-supported tier but also negotiated a discounted rate of [redacted] of the agreement [redacted].[190] It is Pandora's expectation that it will pay [redacted] in the future.[191] These facts provide no basis to believe that the ratio is likely to decline below [redacted].

104. Turning to Dr. Eisenach's statistical analysis, in addition to the lack of a reason to expect the downward trend to continue, the most fundamental problem with the statistical analysis is the lack of sufficient data. Dr. Eisenach relies on just seven data points

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188 Dr. Eisenach simply asserts that "it is reasonable to expect that the adjustment towards equilibrium, market-based rates would have continued." (*Eisenach WDT*, ¶ 126.)

189 *Herring WRT*, ¶ 26.

190 *Herring WRT*, ¶ 28.

191 *Herring WRT*, ¶ 28.

representing the historical ratio of sound recording to musical works royalty payments from 2012-2018.[192] Consequently, the resulting estimates have large confidence intervals. For example, the 95-percent confidence interval around the 2020 forecast of [redacted] (which corresponds to a ratio of [redacted]) is [redacted] (which correspond to ratios of approximately [redacted]).[193]

105. Moreover, Dr. Eisenach's findings are not robust with respect to the specification of the estimating equation. One alternative to Dr. Eisenach's linear regression specification is to use a non-linear functional form that better fits the observed data than Dr. Eisenach's model.[194] For example, as shown in Table 1 and Figure 2 below, using a so-called linear-log functional form for the regression results in a forecasted fair market ratio of [redacted] by 2022, producing a midpoint (following Dr. Eisenach's methodology) of [redacted] between 2018 and 2022. This ratio is approximately [redacted] higher than Dr. Eisenach's predicted ratio of [redacted]

192 *Eisenach WDT,* Table 7.

193 The 95-percent confidence interval is equal to Forecast ± 2.57 × Standard Error of the Forecast. See backup materials submitted with this testimony for work-files that provide the standard errors of the forecasts. 2.57 is the critical value of the t-distribution for the two-sided, five-percent level of significance corresponding to five degrees of freedom (T – K – 1). (See, *e.g.,* A. H. Studenmund (2006) *Using Econometrics: A Practical Guide,* Boston: Pearson, at 522 and Table B-1.)

194 Such a "linear-log" specification is used when the effect of the explanatory variable (in this case, the time trend) on the dependent variable (in this case, the Historical MW as a Share of SR) is expected to increase at a decreasing rate over time. For a general discussion and interpretation, see A. H. Studenmund (2006) *Using Econometrics: A Practical Guide,* Boston: Pearson at 213-214; and James H. Stock and Mark W. Watson (2007) *Introduction to Econometrics,* Boston: Pearson, at 269-270.

Table 1: Forecasted Ratio of Royalties Paid for the Sound Recording Right to the Musical Work Right for Pandora (Linear-Log Regression) [RESTRICTED]

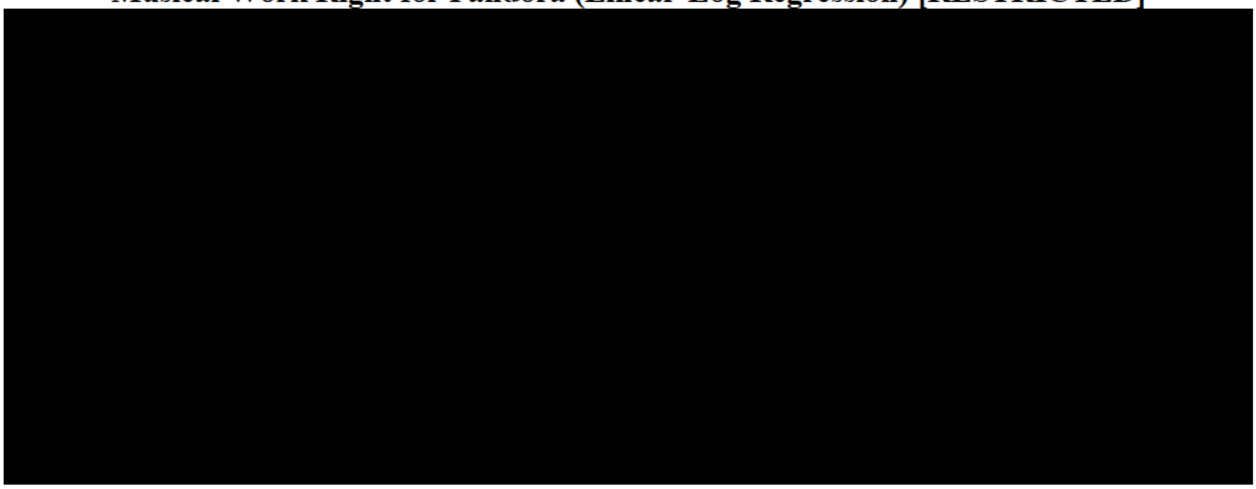
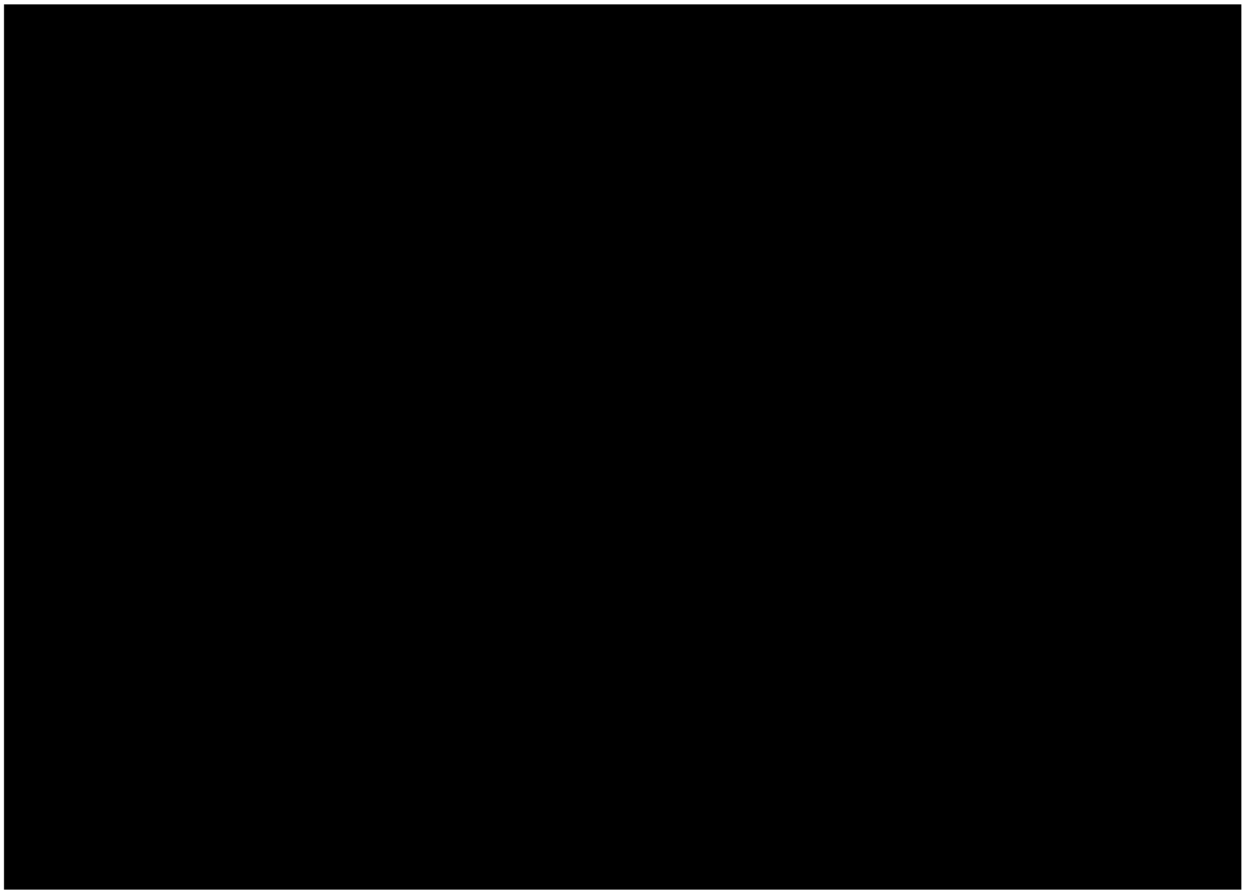
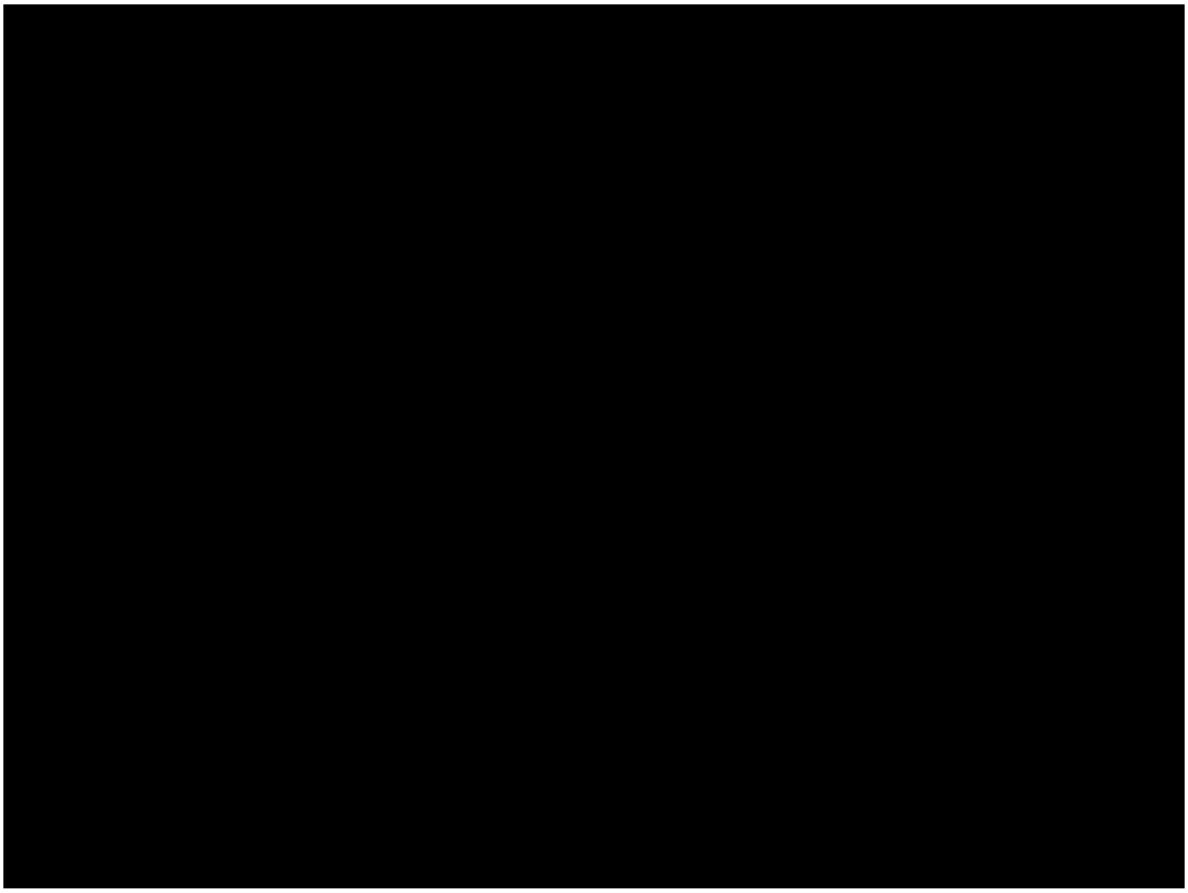


Figure 2: Forecasted Ratio of Royalties Paid for the Sound Recording Right to the Musical Work Right for Pandora (Linear-Log Regression) [RESTRICTED]



106. Alternatively, one could specify a regression with a quadratic time trend, which allows for the possibility that the trend might reverse. As shown in Figure 3 below, had Dr. Eisenach used a quadratic functional form, he would have forecasted such a reversal and predicted a ratio of [redacted] by 2022, with a ratio at the midpoint between the 2018 value and the 2022 value of about [redacted] and a simple average of [redacted] over 2018-2022.

Figure 3: Forecasted Ratio of Royalties Paid for the Sound Recording Right to the Musical Work Right for Pandora (Quadratic Regression) [RESTRICTED]



107. It is important to emphasize that the central lesson here is *not* that either the linear-log or quadratic specification is the correct functional form and leads to the correct answer; they do not—there are simply not enough data and there is a lack of a sound *a*

priori basis for expecting past trends to continue. The lesson is that Dr. Eisenach's trend analysis is simply unreliable. Rather than resorting to unreliable projections, a more relevant ratio (albeit one that still lacks sound theoretical grounding) is the one derived from [redacted] of Pandora's most recent agreements with publishers in Dr. Eisenach's sample, which is [redacted].[195]

3. Dr. Eisenach has no principled basis for selecting a particular number within his broad range of estimated ratios.

108. Dr. Eisenach states that, "in [his] opinion, the YouTube and Pandora agreements provide strong evidence that relative market valuation of sound recordings and musical works lies near the middle of the upper and lower bounds" of his range.[196] However, as discussed above, Dr. Eisenach provides no analysis of the drivers of the differences in the royalty ratios realized for different types of services.[197] Hence, he lacks a principled means of choosing among his estimated ratios.

109. Moreover, taking the average makes sense only if there is reason to believe that the true ratio is the same across all situations but the data are noisy. However, there is no

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195 *Eisenach WDT*, Table 5.

196 *Eisenach WDT*, ¶ 75.

197 See *Eisenach WDT*, ¶ 100 ("Moreover, the parties (i.e. Google, the labels and the publishers), the market (the U.S.), and the time period all correspond to the parties, market and time period involved here. Hence, for purposes of assessing the relative value of the sound recording and musical works rights, the YouTube agreements represent reasonably comparable benchmarks for the purpose of assessing the relative value of sound recordings and musical works rights."), ¶ 102 ("In my opinion, this ratio reflects the relative valuations of sound recording and musical works rights arrived at in free market negotiations in a context which is directly comparable to the markets implicated by Section 115."), and ¶ 103 ("Moreover, the markets and parties involved in the Pandora agreements are comparable to the markets and parties involved in the Section 115 licenses at issue here. Thus, these agreements provide significant insight into the relative value of the sound recording and musical works rights in this proceeding.").

evidence that the true ratios are the same, and, in any event the sample and wide range of values render the estimates unreliable. The values for the ratios that Dr. Eisenach reports in his Table 9 do not represent different data points drawn from a statistically valid sample.[198] As described above, in order to arrive at the values reported his Table 9, Dr. Eisenach ignores or manipulates many data points. For example, rather than report the actual royalty ratios the arise in the Pandora agreements that he examines, Dr. Eisenach bases his estimate on an invalid projection of the ratio to 2020. Similarly, Dr. Eisenach ignores several terms in YouTube agreements that imply a substantially higher ratio than the one that he reports.

110. Taking the midpoint of the range of ratios examined by Dr. Eisenach similarly makes no sense unless there are *a priori* reasons to believe that the true ratio for interactive services lies in the middle of the true ratios for other licensing situations and that Dr. Eisenach has considered a representative sample of different situations. Dr. Eisenach offers no such *a priori* reasons, and I am unaware of any reason to believe that such a relationship should hold.

111. Lastly, I observe that Dr. Eisenach's own analysis suggests that the closest benchmark ratio is between [redacted] Dr. Eisenach asserts that interactive services pay [redacted] of their revenues to record companies and [redacted] to publishers.[199] That implies a ratio of [redacted] But Dr. Eisenach excludes [redacted] in his calculations of [redacted]

198 *Eisenach WDT,* Table 9.

199 *Eisenach WDT,* ¶ 171. I am making this point for the sake of argument only. I do not agree that Dr. Eisenach's ratio approach is economically sound or that the ratio that Dr. Eisenach estimates for interactive services is based on reliable information.

[redacted][200] Including [redacted] the interactive services pay [redacted] of revenues to record companies according to Dr. Eisenach's own calculations.[201] This would imply a split of [redacted].[202]

D. DR. EISENACH'S CALCULATIONS OF PER-PLAY PERFORMANCE ROYALTIES FOR MUSICAL WORKS ARE INCONSISTENT AND UNRELIABLE.

112. As discussed in Section III.A above, Dr. Eisenach proposes two methods for estimating the per-play musical works performance royalties. At the outset, it is important to recognize that Dr. Eisenach's two methods are, except in a very limited circumstance, inconsistent with one another. Specifically, Dr. Eisenach's two approaches are consistent with one another only if the ratio of sound recording royalties paid by noninteractive services to musical works royalties paid by interactive services is equal to the adjustment ratio.[203] There is no reason to expect this formula to hold in general even if, counterfactually, Dr. Eisenach were correct that the adjustment ratio is constant across relevant services. For example, note that, when the adjustment ratio is a constant, a change in the nature of the noninteractive services relative to interactive services will tend to affect the ratio

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200 *Eisenach WDT,* Table 19.

201 *Eisenach WDT,* Table 19.

202 In *Eisenach WDT*, ¶ 171, Dr. Eisenach claims that there is an industry standard that approximately 70 percent of service revenue is paid to rightsholders as royalties. If [redacted] is paid to record companies, then [redacted] of revenue is going to publishers. However, Dr. Eisenach excludes Spotify from his calculation of the [redacted] figure. If he were to include Spotify, then this figure would be [redacted], which implies that the remaining [redacted] of service revenues are paid as royalties to publishers. The corresponding ratio of record label to publisher payments would then become approximately [redacted]

203 See Section A of the Technical below.

of sound recording royalties paid by noninteractive services to musical works royalties paid by interactive services but will have no impact on the adjustment ratio (which, by hypothesis, is fixed). Hence, it is an arithmetical impossibility for the equality to hold both before and after the change.

113. With this background, I now evaluate each of the two methods Dr. Eisenach uses to estimate interactive service musical work performance royalties in turn.

1. Method 1

114. The problem with Dr. Eisenach's Method 1 can be seen most clearly by examining how his estimate of the interactive service musical works performance royalty fits within his overall framework. Recall that Dr. Eisenach's overall approach relies on a proxy free-market total royalty paid by interactive services for musical works that is estimated as follows:

proxy free-market total rate paid by interactive services for musical works	=	total rate paid by interactive services for sound recordings	÷	adjustment ratio

Also recall, that under Dr. Eisenach's Method 1, a proxy free-market performance royalty paid by interactive services for musical works is estimated as follows:

proxy free-market performance rate paid by interactive services for musical works = performance rate paid by noninteractive services for sound recordings ÷ adjustment ratio

Because noninteractive services do not pay mechanical royalties for sound recordings, this proxy is equivalent to the following:

proxy free-market performance rate paid by interactive services for musical works = total rate paid by noninteractive services for sound recordings ÷ adjustment ratio

115. Finally, Dr. Eisenach takes the difference between these two proxies to derive his estimated free-market mechanical rate paid by interactive services for musical works. Using the equations reported above, Dr. Eisenach's estimate of the free-market mechanical rate paid by interactive services for musical works is equal to:[204]

free-market mechanical rate paid by interactive services for musical works = [total rate paid by interactive services for sound recordings − total rate paid by noninteractive services for sound recordings] ÷ adjustment ratio

Differences due to the value of interactivity, exercise of market power, and other factors.

[204] I also demonstrate this point algebraically in Section A of the Technical Appendix.

116. As shown by this equation, Dr. Eisenach attributes *any* difference between the total or all-in rate sound recording royalty rates paid by interactive and noninteractive services to the sound recording *mechanical royalty* paid by interactive services.[205] This attribution is equivalent to making the assumption that the *performance royalty* paid to record labels is the same for both interactive and noninteractive services.[206] There is simply no basis for making such an assumption.

117. Dr. Eisenach attempts to justify his assumption by asserting that:[207]

> [t]he difference between… the free market rate for interactive rights for sound recordings and the statutory rate for noninteractive rights … is akin to a "mechanical" right for sound recordings, directly paralleling the mechanical right for musical works at issue in this proceeding.

Dr. Eisenach's analogy would have a basis in economic logic *if* an interactive service could obtain the necessary rights by purchasing a *noninteractive* service sound recording performance license and combining it with an interactive sound recording mechanical license. Under the hypothetical that sound recording performance rights licenses for interactive and noninteractive series were perfect substitutes for one another, one would expect them to have the same price because otherwise an arbitrage opportunity would

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205 *Eisenach WDT*, ¶ 141:

> For clarity: the term ($SR_{IS} - SR_{NIS}$) is the difference between the all-in sound recording royalty for interactive services and the performance-only sound recording royalty (i.e. 20 cents/hundred streams), which is the implicit mechanical rate for sound recordings[.]

206 I demonstrate this point formally in Section A of the Technical Appendix (see the derivation of equation (A.3)).

207 *Eisenach WDT*, ¶ 137.

exist. Although I am not offering a legal opinion, this clearly is not my understanding of how the licensing process works.

118. In addition to lacking a foundation in sound economics, Dr. Eisenach's conjecture that performance rights royalties will be equal for both interactive and noninteractive services is contrary to observed behavior. For example, ASCAP charges different royalty rates for performance rights depending on whether the service is noninteractive or interactive.[208]

119. Dr. Eisenach asserts that all of the difference between (a) the all-in royalty rate paid to record companies by interactive streaming services and (b) the all-in royalty rate paid to record companies by noninteractive streaming services is attributable to the value of mechanical rights. However, Dr. Eisenach could equally well have asserted that all of the difference between (a) and (b) is due to the difference in the public performance royalty rates for the two types of streaming service.

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[208] See, *e.g., In re Petition of Pandora Media, Inc.,* United States District Court for the Southern District of New York, 1:12-cv-08035-DLC, at 32:

> The interactive/non-interactive distinction in the ASCAP form license agreements is borrowed from 17 U.S.C. § 114's ("Section 114") use of the term interactive in the context of the licensing of sound recording rights (Section 114 and sound recording rights are discussed below). Because ASCAP considers its music to be more valuable to the services it classifies as interactive, it has licensed them at a higher rate than non-interactive services.

See also *id.* at 31-32:

> The 5.0 License allowed non-interactive users to choose between three rate schedules. Schedule A of the 5.0 License, which Pandora chose, required it to pay the higher of 1.85% of revenue or a per-session rate. The 1.85% rate represented an increase in ASCAP's form license rate from the previous rate. The predecessor to the 5.0 License had an equivalent rate for this schedule of 1.615%. ASCAP's form license for interactive services provided for a substantially higher license rate of 3.0%. [Internal footnotes omitted.]

120. In fact, economic theory explains that (a) is larger than (b) because of the differences in the values created and opportunity costs incurred from licensing to interactive and noninteractive services, but it does not provide precise guidance as to what share of the difference between (a) and (b) to attribute to the performance royalty rate as opposed to the mechanical royalty rate.[209]

121. As summarized above, Dr. Eisenach's approach relies on the difference between "the free market rate for interactive rights for sound recordings and the statutory rate for noninteractive rights."[210] The latter is regulated. Thus, Dr. Eisenach's unjustified decision to attribute all of the differences between the total interactive and noninteractive sound recording royalty rates to the implicit interactive mechanical royalty rate is made worse by his failure to make the necessary adjustment for the effects of record company market power and the Cournot Complements Problem in the markets for licenses to interactive services. Because he makes no such adjustment, Dr. Eisenach attributes any increase in interactive sound recording royalties due to the exercise of market power and/or the existence of the Cournot Complements Problem as an increase in the reasonable value of musical works mechanical royalty rates. This approach makes no economic sense. Moreover, because the Judges in *Web IV* set the statutory rate for noninteractive sound recording rates based on an interactive services benchmark, it is inconsistent to utilize the noninteractive sound recording rate in Dr. Eisenach's

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209 In *Web IV*, the Judges found that interactive services are twice as valuable as non-interactive services. (*Web IV Final Determination* at 26338-39, 26344-46, 26353.) This difference was not attributed solely to the mechanical license.

210 *Eisenach WDT*, ¶ 137.

calculations while rejecting the Judges' conclusion regarding the appropriate value of the interactive services sound recording benchmark per-play rates.[211]

122. The strong effects of Dr. Eisenach's unfounded assumption can be seen by considering other allocations of the difference between the all-in sound recording royalty rates for interactive and noninteractive services. Using an adjustment ratio of 3.2:1 for illustrative purposes, had Dr. Eisenach assumed that the entire difference between interactive and noninteractive service royalty rates was attributable to the difference in value of the performance right, Dr. Eisenach would have arrived at a mechanical rate of $0.00 per play, rather than the [redacted] per play that he does come up with. If, instead, Dr. Eisenach attributed half of the difference between the all-in interactive and noninteractive royalty rates to the performance right and the other half to the mechanical right, then his resulting musical works mechanical royalty rate would have been [redacted] per play, which is [redacted] of what he calculates. The point here is not to suggest that any of these calculations is correct; it is to demonstrate the significance of Dr. Eisenach's unwarranted assumption.

2. Method 2

123. Recall that, under Method 2, Dr. Eisenach estimates the free-market performance rate paid by interactive services for musical works from data for actual performance royalties paid by interactive services for musical works. At the outset, it should be noted

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211 *Web IV Final Determination* at 26343 ("the rate set in Dr. Rubinfeld's upstream interactive benchmark market can and should be adjusted to reflect such price competition, in order to render it is usable as an 'effectively competitive' rate in the segment of the market to which that benchmark applies – the noninteractive subscription market.")

that Dr. Eisenach's Method 2 is inconsistent with his claims elsewhere in his testimony that musical works performance royalty rates have been suppressed by the rate courts.[212] If his claims are correct, then he is underestimating the free-market performance rate paid by interactive services for musical works. Because this estimate is subtracted from the estimated free-market total royalties for musical works to obtain estimated free-market mechanical royalties for musical works, the underestimate of performance royalties results in an *overestimate* of the free-market mechanical royalties.

124. Dr. Eisenach estimates the performance rate actually paid by interactive services for musical works by analyzing a sample of royalty payments that have been levied under a percentage-of-revenue royalty structure. He converts these data into what he argues is an equivalent per-play rate. Dr. Eisenach argues that Spotify should not be included in the sample,[213] and he estimates that interactive services paid musical works performance royalties equal to [redacted] of revenues[214] giving rise to an effective per-play royalty rate for musical works performance rights of [redacted].[215] These estimates are based on a sample that excludes Amazon, Apple, Google, and Spotify, and it accounts for just [redacted] of total interactive service revenues in 2015.[216] Given the availability of the relevant data, I am not aware of any sound basis for excluding Spotify from this

212 *Eisenach WDT,* ¶¶ 106-110.

213 See *Eisenach WDT,* ¶ 150. Dr. Eisenach's calculations of the free-market mechanical royalty rate in his Table 14 are based solely on the performance royalty rate calculated from his sample that excludes Spotify.

214 *Eisenach WDT,*¶ 171.

215 *Eisenach WDT,* Table 13 and accompanying backup calculations.

216 NMPA00001647.xlsx. Service revenue data for Amazon Prime Music and Apple Music are not available.

calculation.[217] When Spotify's S1 and S3 subscription services are included in the sample, the musical works performance royalty rate [redacted] and corresponding effective per-play [redacted].[219]

125. The conversion of the percentage of revenue rate into an effective per-play rate—a calculation that depends on average public performance royalty revenue per user per month and the average number of streams per user per month—is also affected by Dr. Eisenach's choice of sample. For example, the average number of streams per user per month excluding Spotify is [redacted], while the average number of streams per user per month is [redacted] when including Spotify's subscription-based services.[220]

126. An alternative approach to calculating the effective per-play musical works performance royalty yields a significantly higher estimate of that rate. Under this alternative approach, I divide the product of the subscription service revenue per user per month and the percentage-of-revenue musical works performance royalty rate to calculate a royalty payment per user per month. I then divide that figure by the average number of plays per user per month. Because not all services report data for each element of this calculation, this calculation requires mixing and matching averages across different subsets of services, an approach that is used by Dr. Eisenach elsewhere in his report but that must be used with caution. This alternative approach yields an effective per-play

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217 See Section III.B.2.a) above for a discussion of the flaws in Dr. Eisenach's rationale for excluding Spotify.

218 NMPA00001647 .xlsx.

219 *Eisenach WDT,*¶ 171 (and accompanying backup calculations).

220 Recall that Dr. Eisenach's data appear to report only compensable plays.

royalty rate for musical works performance rights of [redacted] which is approximately [redacted] than [redacted], which is the [redacted] end of Dr. Eisenach's estimated range.[221] Again, the point is not that [redacted] is the correct estimate of the per-play performance royalty rate for musical works. Rather, the point is that Dr. Eisenach's estimate is uncertain, which reduces the probative value of his overall approach.

E. SUMMARY

127. Under Dr. Eisenach's overall approach:

$$\begin{pmatrix}\text{free-market mechanical}\\ \text{rate paid by interactive services}\\ \text{for musical works}\end{pmatrix} = A \div B - C,$$

where,

$$A = \begin{pmatrix}\text{total rate paid by}\\ \text{interactive services}\\ \text{for sound recordings}\end{pmatrix},$$

$$B = \text{adjustment ratio},$$

and

$$C = \begin{pmatrix}\text{free-market performance}\\ \text{rate paid by interactive}\\ \text{services for musical works}\end{pmatrix}$$

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221 Data from NMPA00001647.xlsx. This calculation includes Spotify's subscription-based (S1 and S3) services, but excludes advertising-supported services. If one includes advertising-supported services, then the effective per-play royalty rate for musical works performance rights is approximately [redacted] (See backup materials.)

128. As described above, Dr. Eisenach's estimates of A, B, and C all are flawed. Specifically:

- *Component A:* Dr. Eisenach's estimated total per-play rate for sound recording performance rights is biased upward. The effectively competitive per-play rate for subscription interactive services used by the Judges in *Web IV* is $0.00383, which is far below the [redacted] per-play rate Dr. Eisenach estimates.

- *Component B:* Dr. Eisenach focuses on a range of 1:1 to 4.76:1 and argues that ratio is most likely to be between [redacted] However, he offers no sound basis for choosing among the different ratios, and the full range of ratios considered by Dr. Eisenach stretches from 1:1 to [redacted]. Arguably [redacted] is what Dr. Eisenach's own analysis suggests should have been used.

- *Component C:* Dr. Eisenach's estimates of the per-play performance royalties for musical works are unreliable. Dr. Eisenach's estimates of the effective per-play royalty rate for musical works performance rights range from [redacted] [redacted]. As shown above, an alternative approaches indicates that the amount could be [redacted] per play.

129. Taking all of these considerations into account, one finds that the per-play royalty rate implied by a corrected version of Dr. Eisenach's methodology could be as low as zero or even negative. His approach calculates a negative value whenever $B > A \div C$. Suppose that A = $0.00383 and C = [redacted]. In this case, the calculated value of the royalty rate is negative for any ratio greater than approximately [redacted]. The appropriate

conclusion is not, of course, that a negative mechanical royalty rate would be reasonable. Rather, the implication of this analysis is that his approach is flawed and unreliable.

F. DR. EISENACH'S ANALYSIS OF THE PER-SUBSCRIBER VALUE OF MECHANICAL RIGHTS SUFFERS FROM SIMILAR PROBLEMS, AS WELL AS ADDITIONAL ONES.

130. Dr. Eisenach admits that his Method 1 cannot be used to estimate a per-user royalty for mechanical rights.[222] However, he does apply his Method 2 to estimate per user rates.[223] This analysis is rendered unreliable by many of the same problems that render his per-play rate analysis unreliable, including the use of an invalid benchmark based on sound recording royalties and the use of invalid adjustment ratios. As I will now discuss, there are also problems with Dr. Eisenach's analysis that are specific to his per-user calculations.

131. First, Dr. Eisenach observes that the record companies reach deals with interactive services in which there is [redacted].[224] He then asserts that industry standard practice allocates approximately [redacted] of revenue to record companies and [redacted] of revenue to music publishers and that deducting 2015 public performance royalties equal to [redacted] of revenue leaves [redacted] of revenue for mechanical royalties for musical works.[225] Assuming monthly subscription

222 *Eisenach WDT,* ¶ 159.

223 *Eisenach WDT,* Table 18.

224 *Eisenach WDT,* ¶ 170.

225 *Eisenach WDT,* ¶ 171.

revenue of [redacted] Dr. Eisenach concludes that this percentage corresponds to a monthly royalty of [redacted] per user, which is similar to Copyright Owners' proposed per-user rate of $1.06.[226]

132. However, Dr. Eisenach's own analysis demonstrates that including Spotify's subscription-based service in the calculation, payments to record companies account for [redacted] of revenue, not the [redacted] that he assumes.[227] Likewise, if one includes Spotify's subscription-based services in the calculation of the public performance royalty rates for musical works, the figure is [redacted] of revenues, rather than the [redacted] figure Dr. Eisenach utilizes.[228] Maintaining the other assumptions of Dr. Eisenach's analysis but making the corrections in the two numbers just described leads to the conclusion that [redacted] of revenue would be allocated to music publishers, of which approximately [redacted] would be available for mechanical royalty payments. For a [redacted], this percentage corresponds to [redacted] per user, per month, which is substantially below Copyright Owners' proposed per-user rate of $1.06.[229]

133. Moreover, Dr. Eisenach's description of the services agreements with record companies is incomplete. Dr. Eisenach is correct that many of the contracts specify [redacted]

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226 *Eisenach WDT,* ¶ 171.

227 *Eisenach WDT,* Table 19 and backup materials (NMPA00001647.xlsx).

228 *Id.*

229 Copyright Owners have proposed a $0.0015 per-play rate and $1.06 per-user rate. (*Copyright Owners' Proposed Rates and Terms* at B-6.)

[redacted].[230] However, Dr. Eisenach omits discussion of provisions that allow for [redacted]. For example, [redacted]

[redacted].[231]

[redacted]

Similarly, the agreement [redacted].[232] In other words, the agreement [redacted]

230 *Eisenach WDT*, ¶ 170.

231 [redacted]

232 [redacted]

[redacted] Thus, Dr. Eisenach's claim that Copyright Owners' proposed per-user minimum of $1.06, which does not vary depending on the type of service or the associated revenues, is [redacted] is invalid.

G. PRIVATE NEGOTIATIONS CANNOT BE COUNTED ON TO ENSURE ACHIEVEMENT OF THE 801(B)(1) OBJECTIVES IF THE COMPULSORY RATE IS SET TOO HIGH.

134. Dr. Eisenach asserts that the statutory rate serves as a ceiling, but not a floor, for privately negotiated rights.[233] He argues that, because of this asymmetry, "accomplishing this goal [of being consistent with the 801(b)(1) standard] requires giving weight to the greater potential for disruption that could result from setting rates too low as opposed to too high."[234] To some degree, Dr. Eisenach is asserting that the Judges need not worry about setting rates that are too high because—in his view—publishers and services will negotiate lower rates should this happen.

135. However, the theory that Dr. Eisenach uses to justify this assertion is incomplete. As a matter of economic logic, the statutory rate could pull private rates upward due to focal point effects, particularly given that a small number of publishers hold the rights to the majority of musical works.[235] Moreover, there are transactions costs associated with negotiating private licensing agreements. Consequently, it can be less costly for a party to take a compulsory license at a higher royalty rate than to negotiate to achieve a lower rate.

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233 *Eisenach WDT,* § II.E.

234 *Eisenach WDT,* ¶ 32.

235 For a discussion of focal points, see Thomas C. Schelling (1960) *The Strategy of Conflict*, Cambridge: Harvard University Press, at 53-80.

136. More important, even if the statutory rate does not pull privately negotiated rates upward, privately negotiated rates may be unreasonably high if the statutory rate is itself unreasonably high. For example, a compulsory license royalty rate that is set too high cannot protect copyright users (ultimately, households that listen to music) from the exercise of market power and the effects of the Cournot Complements Problem that could distort private negotiations. Consider, for example, a situation in which the statutory rate were set at the monopoly level. Under such circumstances, must-have publishers would have no incentive to negotiate a lower rate, as such a rate would yield them lower profits than would royalty rates. Yet, as is discussed above, royalty rates set at monopoly levels do not satisfy the 801(b)(1) objectives. In short, licenses that are privately negotiated in the shadow of an unreasonably high statutory rate may fail to reasonably achieve the 801(b)(1) objectives.[236] Stated another way, private negotiations are not an automatic corrective for statutory rates that are set too high.

137. In summary, setting a statutory rate that is either too high or too low can adversely affect realization of the statutory objectives.

[236] As I described in my initial written testimony, there are market forces that promote the achievement of the statutory objectives in private agreements, such as the 2012 Settlement, when the parties are equally matched (it was an industry-wide negotiation) and the negotiations are conducted in the shadow of a pending rate-setting proceeding that can be expected to set reasonable rates in the event that the private parties do not reach agreement. (*Katz WDT*, § V.A.) However, the economic forces pushing toward achievement of the 801(b)(1) statutory objectives are much weaker when the private negotiations are between a single service and a major publisher and are conducted in the shadow of a rate that is unreasonably high.

IV. DR. GANS'S THEORETICAL MODEL OF RATE LEVELS IS FUNDAMENTALLY FLAWED AND MISLEADING.

138. Dr. Gans presents an analysis based on the Shapley value concept that he concludes supports Copyright Owners' proposed per-play and per-user royalty rates.[237] Dr. Gans describes his methodology as follows:[238]

> I use the "Shapley value" approach (described below) to determine the ratio of sound recording royalties to musical works royalties that would prevail in an unconstrained market. I then estimate what publisher mechanical royalty rates would be in a market without compulsory licensing by multiplying the benchmark sound recording rates by this ratio. I have not carried out an analysis to arrive at benchmark sound recording rates. Rather, my analysis adopts two assumptions of benchmark sound recording rates provided by counsel…

The core of Dr. Gans's methodology is to use the Shapley value model of bargaining to reach the conclusion that publishers should earn the same profits from interactive streaming royalties as record companies currently do.[239]

139. As I will describe in the remainder of this section, Dr. Gans's analysis suffers from at least four major flaws, the first three of which affect his theoretical conclusion regarding equal profits and the fourth of which affects his calculations of those profits:

- He makes unrealistic assumptions about the structure of the Shapley bargaining situation (technically, the characteristic function of the underlying game), which renders his analysis unreliable.

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237 *Gans WDT,* §§ V.B.1 and V.C.

238 *Gans WDT,* ¶ 63.

239 *Gans WDT,* ¶ 74.

- He relies on a benchmark—royalties paid by interactive services to record companies—that has been found to be distorted upward due to a lack of effective competition and the exercise of market power by the record companies.
- He ignores important implications of his approach that reveal that his approach is unreliable and internally inconsistent.
- He uses unreliable numbers as key inputs to his calculations, which renders those calculations unreliable.

A. DR. GANS RELIES ON UNREALISTIC ASSUMPTIONS THAT SUBSTANTIALLY AFFECT HIS FINDINGS.

140. As I explained in my initial written testimony, the Shapley value can be interpreted as a process-based conception of fairness, and at least one academic article has suggested applying the Shapley value to determine statutory royalty rates.[240] However, as I also explained in my initial written testimony, the Shapley value must be applied with care to avoid reaching misleading conclusions.

141. One reason for caution is that the Shapley value takes the structure of the underlying "game" as given and then characterizes the division of surplus among the players in a way that has been interpreted as "fair" *conditional on the structure of the game*. The Shapley value says nothing about whether the structure of the game is itself fair. For example, in some situations, two parties can raise their share of the total rewards by "merging," so that they are treated as if they are a single entity when

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

calculating the Shapley value.[241] Intuitively, this can happen when the two merging parties would otherwise be substitutes for each other from the perspective of the other parties engaged in bargaining and could have been "played off" against one another absent the merger. Many people would not consider it fair to allow several competing suppliers to merge in order to increase their profits at the expense of consumers; yet the Shapley value would itself be silent on this issue. Thus, in applying the Shapley value, it is important to ensure that the structure of the underlying bargaining situation is itself fair (*i.e.*, no party has undue market or bargaining power and the process is sufficiently competitive). In my opinion, Dr. Gans does not do so.

142. For instance, Dr. Gans makes modeling choices that tilt his findings in favor of publishers and against interactive streaming services. Specifically, he assumes that there is a single publisher and a single record company, either of which can block or "veto" the realization of any interactive streaming service.[242] At the same time, he assumes that there are two interactive streaming services that are substitutes for one another.[243] As Dr. Gans explains, this structure tends to favor the hypothetical record company and

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241 Richard Watt (2010) "Fair Copyright Remuneration: The Case of Music Radio," *Review of Economic Research on Copyright Issues*, **7**(2): 21-37, at 33-34, discusses a hypothetical numerical example illustrating this fact. For a general analysis of the effects of such mergers, or "collusion," see Ilya Segal (2003) "Collusion, Exclusion, and Inclusion in Random-Order Bargaining," *Review of Economic Studies*, **70**: 439-460.

242 *Gans WDT,* ¶ 71.

243 *Id.*

publisher at the expense of the hypothetical streaming services.[244] I see no basis for concluding that this hypothetical structure is "fair," and Dr. Gans does not supply one.

143. Indeed, there are strong reasons to conclude that the market structure that Dr. Gans uses is manifestly unfair. For example, the structure that he examines—one with multiple competitors on the service side, but a single publisher and single record company on the seller side—would give rise to equilibrium prices *higher than monopoly* if the publisher and record company were each to set its price unilaterally.[245] It is difficult to see how such an outcome or the market structure giving rise to it could be construed as being fair, let alone attain the other 801(b)(1) objectives.

144. Moreover, Dr. Gans' primary conclusion—that record labels and publishers should earn the same profits—is the a result of the particular structure that he has chosen to use. Had he considered a range of models of *effectively competitive* record companies and publishers, Dr. Gans would have found—contrary to the example that he considered—that record companies and publishers do not always earn the same profits as one another under Shapley bargaining.[246] Dr. Gans also failed to consider alternative structures that would result in publishers' and interactive streaming services' earning

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244 *Gans WDT,* ¶ 72.

245 This conclusion holds because, from the perspective of an interactive streaming service, the musical works rights and sound recording rights are perfect complements and, thus, the Cournot Complements Problem would arise under the market structure assumed by Dr. Gans.

246 Examples in which publishers earn lower profits than do record companies can be constructed by considering situations in which no one record company or publisher is must have and the different publishers are closer substitutes for one another than are different record companies. (For a discussion of the implications of the degree of substitution on Shapley values, see Section C of the Technical Appendix below.)

equal profits to one another;[247] under the structure Dr. Gans examines, streaming services earn less than either publishers or record companies because he assumes that there are competitive streaming services but a monopoly publisher and a monopoly record company.

145. The structure that Dr. Gans examines also fails to take the relationship between record companies and publishers into account. The major record companies and major music publishers have significant ownership overlaps.[248] If one models the bargaining as taking place between an integrated record company/music publisher and one or more interactive services, Dr. Gans's approach yields *no prediction* regarding the ratio of record company profits to publisher profits, although it would predict that interactive

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247 One such structure is one under which there is one interactive streaming service, one publisher, and one record company, each with veto power.

248 *Goldman Sachs Report* at 5 ([redacted]. For example, Sony Music Group owns 100 percent of the record company Sony Music Entertainment and 100 percent of the music publishers Sony/ATV and BMG Music (and approximately 30 percent of EMI). (Sony Consolidated Financial Results for the Second Quarter Ended September 30, 2016, *available at* https://www.sony.net/SonyInfo/IR/library/fr/16q2_sony.pdf , site visited January 31, 2017, at 7. See also, "Biography: Sony Music Entertainment," Radio Swiss Jazz, *available at* http://www.radioswissjazz.ch/de/musikdatenbank/musiker/87404fbf45c5962d2e708d631faeacd2ac2/biography, site visited January 31, 2017; "Sony Slashed 60% of EMI Publishing Staff After Historic $2.2bn Buyout," *Music Business Worldwide*, September 5, 2016, *available at* http://www.musicbusinessworldwide.com/sony-cut-60-of-emi-music-publishings-workforce-after-historic-buyout/, site visited January 31, 2017.) Universal Music Group owns 100 percent of the record company Universal Music Enterprise and 100 percent of the music publisher UMPG. (See Vivendi 2015 Annual Report, *available at* https://www.vivendi.com/wp-content/uploads/2016/03/20160331_Vivendi_Annual_Report_Fiscal_Year_2015.pdf, site visited January 31, 2017, at 7.) Warner Music Group owns 100 percent of the record companies Warner Bros. Records and Atlantic Records, and 100 percent of the music publisher Warner/Chappell. (Warner Music Group 2016 10-K for the Fiscal Year Ended September 30, 2016.)

services should be earning profits, which they generally are not, and that the profits earned by interactive services would be equal to the *sum* of the profits earned from streaming by record companies and music publishers.[249] In short, Dr. Gans picked a very particular market structure without providing any rationale for why that particular structure is preferable to the myriad other possibilities, many of which lead to dramatically different results.

146. Even holding issues of market structure aside, Dr. Gans takes an approach toward modeling the relationship between publishers and songwriters that biases his estimate of reasonable royalties upward. Specifically, in his calculations, Dr. Gans argues that music publishers should earn profits equal to those of the record companies *after* subtracting payments that publishers make to songwriters and repertoire.[250] Further, Dr. Gans assumes that payments to songwriters and repertoire are always equal to 55 percent of publishers' revenues, regardless of the level of those revenues.[251] This treatment of payments to songwriters and repertoire is inconsistent with the proper use of the Shapley value to determine a fair allocation of economic returns between copyright owners and copyright users.

147. In effect, Dr. Gans treats songwriters like an input no different than electricity or office space. In his model, songwriters are simply a cost of the publishing business, and

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249 This conclusion follows because there would be a single Shapley value for the integrated entity. For example, if there were one rights holder and one interactive service, each with veto power, they each would have a Shapley value equal to one half of the total industry profits generated by interactive streaming.

250 *Gans WDT,* ¶ 77 and Table 3.

251 *Gans WDT,* Table 3.

the economic returns to songwriting are treated as a black box. One might attempt to defend Dr. Gans's approach by arguing that there is free entry and exit into songwriting, so that—at the margin—songwriters earn their opportunity cost of being songwriters and, hence, payments to songwriters are equal to opportunity costs. However, this logic fails because songwriters clearly have widely varying talent levels as songwriters, as well as widely varying opportunities outside of songwriting. There is no reason to believe that the marginal songwriter's opportunity cost is equal to the average songwriter's opportunity cost. And economics clearly predicts that, while the marginal songwriter will earn an amount just equal to his or her opportunity cost, inframarginal songwriters will earn economic rents, with some of them earning very considerable rents.[252]

148. Moreover, if Dr. Gans's implicit assumption that payments to songwriters and repertoire simply represent a parametric input cost (*e.g.*, songwriters' opportunity costs of foregoing other vocations) were valid, then one would not expect those costs to rise in proportion to publisher revenues.[253] Instead, one would expect the dollar amounts paid to songwriters to remain constant or possibly rise but to do so much less than proportionately with publisher revenues.

149. To illustrate the significance of Dr. Gans's flawed assumption, I have recreated Dr. Gans's analysis subject to making a single modification: rather than assume that

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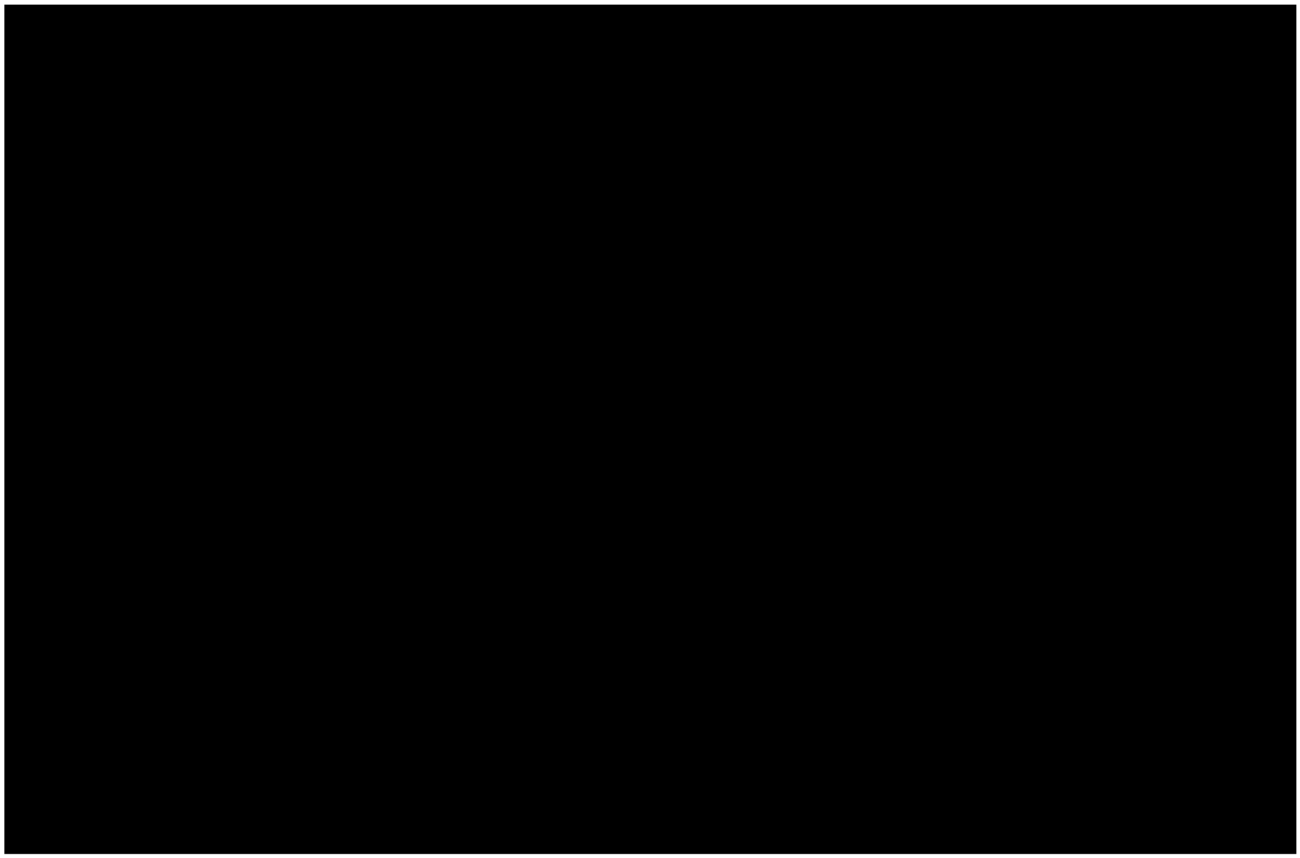
[252] The amounts of economic surplus earned by inframarginal producers (songwriters in this case) are sometimes referred to economic rents, which occur when there is an upward-sloping or less-than-perfectly elastic supply curve. (Robert S. Pindyck and Daniel L. Rubinfeld (2009) *Microeconomics*, Boston: Pearson at 544-545.)

[253] One might argue that current contracts call for revenue sharing, but those contracts are themselves subject to bargaining and renegotiation and, thus, should not be treated parametrically.

songwriters receive a set percentage of publisher revenues, I make the more natural assumption that the payments to songwriters to cover their opportunity costs remain constant rather than vary with the level of mechanical royalties paid by interactive streaming services to publishers. The results of this correction are shown in Table 2 below, which recreates Dr. Gans's Table 3 with the more natural assumption of constant payments for songwriters and repertoire. As shown in the table below, substituting this one, more realistic assumption, dramatically changes the results: rather than concluding that publisher revenue should increase by [redacted] per user, per month, the analysis indicates that publisher revenues should increase by only [redacted] per user, per month. The resulting ratio of record company revenues to publisher revenues is [redacted], rather than the [redacted] ratio that Dr. Gans computes. As a result, this one change alone reduces Dr. Gans's calculated per-stream rate from [redacted] even if one accepts the rest of his flawed methodology.

Table 2: A Modification to Dr. Gans's Table 3 [RESTRICTED]



B. DR. GANS'S SOUND RECORDING BENCHMARK IS DISTORTED UPWARD BY A LACK OF EFFECTIVE COMPETITION.

150. Dr. Gans quotes the distinguished regulatory economist Alfred Kahn as saying:[254]

> the single most widely accepted rule for the governance of the regulated industries is regulate them in such a way as to produce the same results as would be produced by effective competition, if it were feasible.

Dr. Gans' approach strikingly violates this rule: the benchmark rate he utilizes in his analysis—the rate paid by interactive services to record companies—is well above the effectively competitive level due to the exploitation of market power by the record labels, and Dr. Gans makes no adjustment for this distortion.

254 *Gans WDT,* ¶ 31 (citing Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions,* Cambridge, Massachusetts: The MIT Press, 1988, at 17/I).

151. Instead, Dr. Gans attempts to justify his use of sound recording royalties as a benchmark as follows:[255]

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

According to Dr. Gans, "the labels are able to freely negotiate interactive streaming rates that produce a competitive level of profits from this business for them…".[256] Dr. Gans also characterizes the licensing of sound recording public performance rights to interactive streaming services as an example of an "orderly functioning" market that does not suffer from "monopolization" or give rise to competitive concerns.[257, 258]

152. As discussed in Section III.B.1.a) above—and in direct contrast to Dr. Gans—the Judges found in *Web IV* that the major record companies possess and exercise substantial market power in the market for recording performance rights sold to interactive streaming services.[259] Indeed, there are strong reasons to believe that—due to

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255 *Gans WDT,* ¶ 61.

256 *Gans WDT,* ¶ 75.

257 *Gans WDT,* ¶¶ 12-13.

258 Dr. Gans also tries to use the alleged competitiveness of the market for recording performance rights to argue that compulsory licensing of mechanical rights is superfluous. According to Dr. Gans, "[t]he prediction of anticompetitive theories that gave rise to compulsory licensing has not been borne out to date in markets with similar characteristics." (*Gans WDT,* ¶ 12.) However, as discussed below, the prediction of anticompetitive theories have been borne out to date.

259 *Web IV Final Determination* at 26368 ("Because the Majors could utilize their combined market power to prevent price competition among them by virtue of their complementary oligopoly power… the Judges must establish rates that reflect steering, in order to reflect an 'effectively competitive' market..").

the Cournot Complements problem—the royalty rates obtained by the record companies are even higher than monopoly levels. This conclusion is supported by the U.S. Federal Trade Commission's ("FTC") closing statement in its review of Universal Music Group's acquisition of EMI. There, the FTC concluded that "the labels' licensed sound recordings were found to be complements not substitutes."[260] Under such circumstances, there will be no competition between record labels in licensing interactive services, as complementary products, by definition, do not compete with each other. As a direct result, the market in which record companies sell licenses to interactive services cannot be effectively competitive. Nevertheless, and despite acknowledging this complementarity, Dr. Gans reaches exactly the opposite conclusion. His assertion that the FTC's closing statement supports his claim that the upstream market in which record companies sell licenses to interactive services is effectively competitive[261] is directly at odds with the closing statement itself, the conclusion reached by the Judges in *Web IV*, and sound economic analysis.[262]

153. In a possible attempt to justify his use of a benchmark rate that arises in a market that is clearly not subject to effective competition, Dr. Gans appears to argue that

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260 *Gans WDT,* footnote 22, summarizing Statement of Bureau of Competition Director Richard A. Feinstein *In the Matter of Vivendi, S.A. and EMI Recorded Music*, FTC, September 21, 2012.

261 Dr. Gans asserts that the Federal Trade Commission's findings are "additional evidence of the ability of unconstrained licensing negotiations with interactive streaming services to produce reasonable rates while delivering wide access to recorded music." (*Gans WDT,* footnote 22.)

262 As one illustration of this last point, in Section C of the Technical Appendix below, I use the concept of Shapley value to demonstrate that bargaining with suppliers of complements leads to supracompetitive prices.

vigorous downstream competition prevents harm in the upstream market.[263] This argument is invalid. When "[c]ompetition between streaming services in the downstream market is vigorous,"[264] competitive pressures in the downstream market give rise to a smaller markup of retail price over cost so that, for any given license fees set by publishers, there will be lower retail prices. Hence, with highly competitive downstream markets, there can be incentives for record companies to charge *higher* upstream prices. In fact, the Judges in *Web IV* assessed arguments regarding the effect of downstream competition on upstream prices for the licensing by the record companies to interactive services and correctly concluded that "the impact of piracy and other downstream competitors (such as YouTube) does not serve to promote 'effective competition' in any of the relevant upstream markets, including the upstream market for sound recordings licensed for use by interactive subscription services."[265] Dr. Gans has presented no evidence to call this conclusion recently reached by the Judges into question.

154. Although Dr. Gans characterizes the recording royalty rate secured by record labels from interactive services as having been reached in an effectively competitive, "free" market, it is unquestionably not. Using such a rate as a benchmark without adjustment leads to inflated royalty rates. In contrast, the rates of the 2012 Settlement are the result of an industry-wide agreement negotiated in the shadow of a statutory proceeding, and these rates promote the four 801(b)(1) statutory objectives.

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263 *Gans WDT,* ¶ 13.

264 *Gans WDT,* ¶ 13.

265 *Web IV Final Determination* at 26343.

C. ADDITIONAL FLAWS IN DR. GANS'S APPROACH

155. According to Dr. Gans, his Shapley value analysis supports the conclusion that, "in the absence of compulsory licensing, we would expect the publishers to make the same profit in aggregate from this business as the labels."[266] Dr. Gans interprets this expectation to mean that publishers should earn the same profits as record companies *currently* earn.[267] Even if one accepted his theoretical, Shapley value analysis, this claim would still be false for several reasons.

1. Dr. Gans does not account for differences in risk bearing and investment contributions.

156. One reason that one would not expect publishers to make the same profit in the aggregate from streaming as do record companies is that there are significant differences in the investments made and financial risks borne by publishers and record companies. As I explained in my direct testimony, music publishers spend relatively little to invest in the creation, marketing, and distribution of musical works.[268] For example, in 2015, Universal Music Group (UMG Recorded Music), the music recording arm of Vivendi, invested 12 percent of its gross revenue in payments to artist and repertoire owners,[269] while Universal Music Publishing Group (UMPG), the music publishing arm of Vivendi,

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266 *Gans WDT*, ¶ 75.

267 *Gans WDT*, ¶ 76.

268 *Katz WDT*, ¶ 96 (citing Rebuttal Testimony of Charles Ciongoli, *In the Matter of Digital Performance Right in Sound Recordings and Ephemeral Recordings,* Docket No. 2005-1 CRB DTRA, September 2006, at 54 ("Universal Publishing spends little or nothing to create, market, promote, manufacture and distribute copyrighted musical works.").)

269 Vivendi 2015 Annual Report, *available at* https://www.vivendi.com/wp-content/uploads/2016/03/20160331_Vivendi_Annual_Report_Fiscal_Year_2015.pdf, site visited February 6, 2017, at 187 and 222.

[redacted][270] Similarly, artist and repertoire costs represented 33 percent of Warner Music Group's 2015 revenues,[271] while [redacted].[272]

157. Were one to use a sound recording royalty rate as a benchmark for purposes of setting the rates at issue here, it would be necessary to make an adjustment to account for these differences. Although Dr. Gans recognizes the need to adjust for certain cost differences, he makes no adjustment for differences in risk, although private parties would be expected to do so. In doing so, Dr. Gans ignores the statutory objective of reflecting relative contributions.

2. Dr. Gans ignores the implications of his analysis for the profits earned by streaming services.

158. Dr. Gans ignores the implications of his approach for the profits earned by streaming services. Under Dr. Gans's assumptions, the equilibrium royalties should result in the streaming services' earning positive profits. Moreover, the prediction that streaming services should earn profits on average would hold even if Dr. Gans were to assume a different industry structure. Yet, the analyst report on which Dr. Gans relies to quantify his Shapley value analysis states that, [redacted]

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270 [redacted] (UMPG00002118.xlsx).

271 Warner Music Group Corp. 10-K for the Fiscal Year Ended September 30, 2015, *available at* http://investors.wmg.com/phoenix.zhtml?c=182480&p=irol-sec&control_selectgroup=Annual%20Filings, site visited February 10, 2016.

272 [redacted] (WC00000829.xlsx).

[redacted][273] The fact that interactive streaming services generally have yet to be profitable, and it is unclear that they will ever be profitable, suggests that surplus is not currently being equally split and that it would be necessary to lower current royalty rates in order to allow interactive streaming services to earn profits. Thus, Dr. Gans's Shapley value analysis suggests that royalty rates equal to or lower than those of the 2012 Settlement are appropriate.

159. One might argue that a focus on the current lack of streaming profits fails to account for the possibility of profits in the long run. However, as I will now demonstrate, even accounting for the possibility of long-run profits, Dr. Gans's approach implies that royalty rates equal to or lower than those of the 2012 Settlement are appropriate when publishers and streaming services are modeled as having equal bargaining power. For example, consider a setting in which: (a) all publishers are treated as one bargaining party; (b) all streaming services are treated as a second bargaining party; and (c) the royalty payments made by streaming services to record companies are taken as given (as Dr. Gans does). In this setting, the Shapley solution will coincide with the Nash Bargaining Solution and the gains from trade will be split equally between the two bargaining parties.

160. Combined with projections from the same Goldman Sachs report upon which Dr. Gans relies, this Shapley value analysis supports the conclusion that an all-in royalty rate (*i.e.*, the sum of mechanicals plus performance rights) for musical works of 10 percent is

[273] *Goldman Sachs Report* at 66 (emphasis in original) (cited in *Gans WDT,* footnote 39).

too high. Specifically, [redacted][274] In other words, even after suffering from many years of losses, the interactive services would earn lower profits per year than would the publishers. Thus, in order to achieve the equal split of surplus implied by the Shapley value analysis above, it would be necessary to lower the royalty rates in order that publishers' earn less and streaming services more—a result directly at odds with the significant rate increase sought by Copyright Owners. Moreover, if one adjusted for risk bearing and relative contributions, one would conclude that streaming services should, on average, earn greater profits than publishers, indicating that the royalty rate paid by interactive services to publishers should fall by even more.

161. Lastly, a market structure comprising one publisher, one record company, and one interactive service, each with veto power, provides another way to see the fundamental flaw in Dr. Gans's approach of using a Shapley value analysis to argue that publishers should earn the same profits from streaming as do record companies. Suppose that all three parties are engage in the bargaining. Given that each party would have veto power, they would have equal Shapley values. Hence, applied to this market structure, Dr. Gans's logic would imply that the record company, the music publisher, and the interactive streaming service each should earn as much profit per user from streaming as

[274] *Goldman Sachs Report* at 13 and 67. Taking a forward-looking approach in this manner is highly favorable to publishers because at present streaming services generally lose money while publishers are profitable. Hence, a short-run view would indicate the current royalty rates are too high under *any* assumptions about the structure of the underlying bargaining game for which the Shapley value is being calculated.

record companies currently do. However, it would be infeasible to raise all three parties' profits up to the record companies' level—there are simply not enough profits to go around. Of course, this finding is not surprising given the inflation of record company profits due to the exercise of market power.

3. Dr. Gans ignores the implications of what he claims is the artificial suppression of musical works mechanical royalties.

162. According to Dr. Gans, "[t]he compulsory licensing of musical works has depressed mechanical royalty rates in comparison to the non-compulsory licensing of sound recordings."[275] Dr. Gans admits that "[t]he statutory license shelters the services against exercise of market power by a copyright holder."[276] But he apparently sees this feature as a vice rather than virtue.

163. As described in Section III.B.1.c) above, intuitively, if Copyright Owners were correct that publishers receive royalties that are too low, then it would follow that record companies receive royalties that are too high. This effect arises because "depressing" musical works royalties will artificially inflate the pool of surplus divided between labels and services and, thus, lead record companies to realize a share of the total surplus that is artificially high.

164. This point can be demonstrated formally through application of Dr. Gans's bargaining framework. Assume that there is one publisher, one record company, and one streaming service. For expositional convenience, assume that that no party incurs any

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275 *Gans WDT,* ¶ 9.

276 *Gans WDT,* ¶ 16.

costs associated with streaming except that the streaming service considers the royalty payments to be a cost. Given the latter assumption, the surplus to be divided among the bargaining parties equals the revenues that the service is able to generate. Let R denote the revenues (equal to total profits) available to the three parties if they are able to reach an overall agreement. Let F_P, F_R, and F_S denote the profits that the respective parties would earn in the event that they are unable to reach an agreement that includes all three of them, and assume that $F_P = F_R = F_S = 0$. In this situation, each party is said to have veto power—anyone party can refuse to agree and, thus, block the other two parties from achieving any surplus. This formulation is consistent with Dr. Gans statement that sound recording rights and musical works rights are perfect complements.[277] The parties are symmetrically positioned and, under Shapley bargaining in this situation, each party will receive $R/3$. Hence, the record company and the publisher would each receive a royalty rate equal to 33 percent of service revenues.

165. Now suppose that government intervention "artificially" holds the publisher's royalty rate to 10 percent, but the service and the record company remain free to bargain. In this case, there are two parties bargaining over potential surplus of $.9 \times R$, which is equal to the service's revenues minus the 10 percent paid to the publisher. Under Shapley bargaining, each of the parties will receive half of the surplus, or $½(.9 \times R)$. In other words, the record company will receive a royalty rate equal to 45 percent of service revenues.

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[277] *Gans WDT*, ¶ 14 ("sound recording rights and musical works rights for streaming are two sides of the same coin—one right cannot be delivered to listeners, or hold any value, absent the other right.") and ¶ 23.

166. By Dr. Gans's argument, the publisher and record company would each receive 45 percent of service revenues if both were able to engage in unconstrained negotiations with the service, for a total royalty of 90 percent.[278] However, the Shapley value methodology on which Dr. Gans ostensibly relies implies that, under unconstrained bargaining, each would receive 33 percent, not 45 percent.

167. The problem may actually be worse than the example above suggests. To see why, suppose that there is one service, one publisher, and three record companies, each of which is "must have." Under these conditions, unconstrained bargaining among five parties with veto power will lead to an equal five-way split. Hence, each of the three record companies would receive a 20-percent share. If, instead, the publisher royalty rate was constrained to 10 percent, the remaining four parties would split the remaining 90 percent of the revenues equally, so that the three record companies would jointly receive 67.5 percent =.75 × .9 of revenues. Hence, under these circumstances, Dr. Gans's claim that that music publishers would be expected to earn the same profits as record companies as the result of bargaining would lead to the absurd conclusion that streaming services should pay royalties equal to 135 percent of their revenues in perpetuity, with the record companies and publishers each getting 67.5 percent of the revenues.

168. Dr. Gans fails to account for the distortion that arises from his assumption that record companies' revenues are constant. Indeed, Dr. Gans asserts that it is impossible to

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278 *Gans WDT*, ¶ 76 ("If publisher royalties were not subject to compulsory licensing but were determined in a free market consistent with outcomes of a Shapley cooperative game, publisher profits would equal label profits from interactive streaming.").

make an appropriate adjustment.[279] Given the possible magnitude of such effects, Dr. Gans's statement amounts to an admission that his approach is incapable of yielding a reliable estimate of reasonable rates. By contrast, the 2012 Settlement provides a reliable benchmark.

169. It is important to state that I am making the above argument solely to demonstrate the inconsistency of Dr. Gans's various claims. I do not agree that mechanical royalty rates have, in fact, been suppressed below effectively competitive levels. Indeed, as I discuss at length in my initial written testimony, it is my view the rates that publishers currently secure have not been so suppressed and, if anything, the current rates are above competitive levels, not below them.[280] In addition to the evidence examined in my written direct testimony, I observe that Dr. Gans's claim that royalty rates have been depressed by a failure to account for the higher value of new consumption patterns is incompatible with publisher behavior. Specifically, Dr. Gans argues that the unbundling of albums made possible by permanent downloads and streaming has depressed weighted average per-track mechanical royalty rates because the unbundling has enable listeners to focus their consumption of more popular tracks.[281] Intuitively, Dr. Gans is asserting that

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279 *Gans WDT*, footnote 40, in which he discusses a parameter in an alternative model that would incorporate the effects on record companies' revenues:

> This parameter is a quantitative measure of how the services would respond in their negotiations with labels if the mechanicals were higher, typically measured by a more detailed model of market conditions. However, for this market I do not believe that there are reliable estimates of the demand, supply, and competitive conditions needed to implement the calculation – in other words, there is no reliable estimate of α - making such a calculation impossible.

280 *Katz WDT*, §V.

281 *Gans WDT*, § III.C.

royalties should now be higher because consumers are no longer forced to pay for tracks to which they do not want to listen. However, Dr. Gans's assertion that unbundling has rendered previous rates obsolete is incompatible with the music publishers' recent decision to reach an agreement with record companies that covers unbundled permanent digital downloads and maintains the royalty rate of $0.091 per track.[282]

4. Dr. Gans offers no basis for concluding that mechanical royalties should be increased instead of performance royalties.

170. Copyright Owners have taken the view that the levels of mechanical royalties and performance royalties should be analyzed and determined separately from one another.[283] Dr. Gans's Shapley value calculations are predicated on the assumption that any estimated shortfall in publisher revenues should be made up by increasing mechanical royalty payments rather than performance royalties.[284] However, Dr. Gans provides no basis for his assertion that publisher profits should be raised by increasing mechanical royalty rates rather than increasing performance royalty rates. And his Shapley value analysis provides no basis for making such a distinction.

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282 *In re Determination of Royalty Rates and Terms for Making and Distributing Phonorecords (Phonorecords III)*, Docket No. 16-CRB-0003-PR (2018-2022), Motion to Adopt Settlement Industry-wide, October 28, 2016.

283 For example, when assessing the appropriate mechanical royalty rate, Dr. Eisenach holds fixed the performance royalty rate. (See, *e.g., Eisenach WDT*, Table 14 and Table 18.) Similarly, Dr. Gans's Shapley value approach holds fixed the performance royalty rate and assumes mechanical royalty rates would account for 100 percent of incremental publisher revenue. (See, *Gans WDT*, Table 3.)

284 *Gans WDT*, Table 3.

D. DR. GANS BASES HIS CALCULATIONS ON POORLY SUPPORTED NUMBERS.

171. Dr. Gans relies on estimates from one financial analyst.[285] The figure cited by Dr. Gans for record company profits is a number that assumes that: the streaming service collects $10 per subscriber per month (which is [redacted] than [redacted] actual average[286]); [redacted] [287] The report allocates various record company costs (*e.g.,* artists and repertoire and overhead expenses) across different formats (*e.g.*, CDs, digital downloads, and different types of streaming services) in unspecified ways. The lack of an explanation is an important omission because the allocation of fixed costs and overheads can be highly subjective and, potentially, have large effects on the resulting values of the numbers on which Dr. Gans relies.

172. Dr. Gans also fails to note that the same report estimates that record companies and publishers earn only $2.90 and $0.90 per user, respectively, when one considers both subscription and advertising-funded streaming services.[288] Had he used the figures for the full range of streaming services in his calculations but maintained all of his other assumptions, Dr. Gans would have concluded that publisher royalties should be increased by [redacted] per user per year rather [redacted] This lower amount would correspond to [redacted]

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285 *Goldman Sachs Report* (cited in *Gans WDT*, footnote 39).

286 The average revenue per user per month for [redacted] subscription-based services was [redacted] in 2015. Including its advertising-supported service, Spotify's average revenue per user per month was [redacted]. (NMPA00001647.xlsx.)

287 *Goldman Sachs Report* at 54 (Exhibit 92) and 58 (Exhibit 102).

288 *Id.* at 54.

per user per month, which is much less than the increase in the per-subscriber minimum for which Dr. Gans advocates.[289]

173. Dr. Gans relies on a benchmark per-play royalty rate for sound recordings equal to [redacted].[290] Dr. Gans indicates that this number was supplied to him by counsel for Copyright Owners and that it was reported by Dr. Eisenach.[291] As such, this number suffers from all of the infirmities that I describe in my rebuttal of Dr. Eisenach's calculation of this number in Section III above. In Section III.B.3, I showed that $0.00383 per play is the benchmark rate implied by the approach utilized by the Judges in the *Web IV*. Had Dr. Gans used this value for the per-play royalty rate for sound recordings instead of [redacted] but maintained all of his other assumptions, he would have found that his estimated musical works mechanical royalty rate would fall from [redacted] per play to [redacted] per play, [redacted] percent.[292]

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289 Dr. Gans calls for a per-user mechanical rate of [redacted], while the current (2015) average per-user mechanical rate is [redacted] based on a sample of services that includes advertising-supported services, implying that Dr. Gans is advocating for a [redacted] per user per month increase in the mechanical royalty rate. (See *Gans WDT*, Table 3 and NMPA00001647.xlsx.)

290 *Gans WDT*, ¶ 78.

291 *Gans WDT*, ¶ 63 and notes to Table 3.

292 Under Dr. Gans's approach, the musical works mechanical per-play royalty is equal to the sound recording per-play royalty divided by his adjustment ratio of [redacted] times his assumed percentage of publisher revenue attributable to mechanical royalties, [redacted] (*Gans WDT*, ¶¶ 78-79.) Hence, using $0.00383 as the value of the musical works mechanical per-play royalty yields a musical works mechanical royalty rate of [redacted]

E. SUMMARY

174. For the foregoing reasons, Dr. Gans's analysis does not provide a reliable basis upon with to base musical works mechanical royalties. The theoretical conclusions that Dr. Gans derives from his Shapley value model: rely on unrealistic assumptions about the nature of bargaining between services, music publishers, and record companies; use a benchmark—royalties paid by interactive services to record companies—that has been found to be distorted upward due to a lack of effective competition and the exercise of market power by the record companies; and generates implications that reveal his model to be unreliable and internally inconsistent. Moreover, Dr. Gans relies on inputs, including numbers derived from Dr. Eisenach's analysis, that are themselves unreliable.

V. DR. RYSMAN'S ANALYSIS OF RATE LEVELS IS FUNDAMENTALLY FLAWED AND MISLEADING.

175. In an attempt to justify the Copyright Owner's proposal to raise royalty rates considerably above their current levels, Dr. Rysman argues that the interactive streaming industry has prospered and attracted entry during a period in which many services have paid effective mechanical royalty rates well above those proposed by Copyright Owners.[293] As I explain below, there are numerous flaws with Dr. Rysman's analysis of effective mechanical royalty rates that render his conclusions misleading and unreliable. Dr. Rysman also argues that the Copyright Owners' royalty proposal achieves the 801(b)(1) objectives. As I discuss below, Dr. Rysman's analysis of the extent to which Copyright Owners' proposed royalty rates attain each of the 801(b)(1) objectives is

[293] *Rysman WDT,* § V.

unsound. Lastly, Dr. Rysman asserts that, even those services that would face royalty rate increases as a result of Copyright Owners' fee proposal, would neither raise prices to consumers nor reduce expenditures on other inputs to service provision.[294] As I discuss below, Dr. Rysman relies on an argument that is contrary to basic economic principles.

A. DR. RYSMAN'S CLAIMS REGARDING EFFECTIVE ROYALTY RATES ARE UNRELIABLE AND MISLEADING.

176. Dr. Rysman calculates historical "effective per-play royalty rates" and argues that interactive services have been thriving while paying effective per-play mechanical royalty rates well above those proposed by Copyright Owners.[295] There are numerous flaws with Dr. Rysman's analysis of effective per-play mechanical royalty rates that render his conclusions misleading and unreliable.[296] A critical flaw is that many of the services on which he bases his conclusion "that there are numerous services that have paid effective per-play rates well above what Copyright Owners propose" are tiny and

294 *Rysman WDT,* ¶ 101, footnote omitted.

295 *Rysman WDT,* ¶¶ 62-65.

296 In addition to the errors that I discuss below, Dr. Rysman reports incorrect numbers in his written testimony that appear to be corrected in his backup materials. (*Rysman WDT* backup materials (NMPA00001670.xlsx).) Dr. Rysman reports a 2014 per-play rate of [redacted] in Table 1 of his initial testimony, which is greater than NMPA's proposed rate $0.0015. However, Dr. Rysman's backup materials reveal that [redacted] Dr. Rysman reports [redacted] in 2014 in his initial testimony. (*Rysman WDT,* Table 1.). One of Dr. Rysman's numbers for Tidal is also incorrect. Dr. Rysman uses a field called [redacted] Dr. Rysman reports [redacted] for Tidal in 2015 in his initial testimony. (*Rysman WDT,* Table 1.)

manifestly have not prospered.[297] Dr. Rysman's own analysis reveals that Amazon, Apple, Rhapsody, and Spotify all paid effective per-play mechanical rates below the per-play prong of Copyright Owners' proposal in 2015, the most recent year examined by Dr. Rysman.[298] Moreover, Dr. Rysman does not appear to account for the fact that Copyright Owners' proposal has a per-user prong, as well as a per-play prong. When there are multiple prongs, the effective per-play rate may be higher than the rate specified in the per-play prong. Dr. Rysman also does not account for the fact that Copyright Owners' proposal contains a broader definition of compensable plays, which raises the effective per-play rate in comparison with the current statutory rates.[299] Dr. Rysman also conducts a similar analysis with respect to effective per-user mechanical royalty rates, and this analysis is similarly misleading and unreliable.[300]

177. It is useful to consider some of the flaws in Dr. Rysman's analysis in more detail. First, Dr. Rysman's Figure 7, which gives the appearance that [redacted]

297 *Rysman WDT,* ¶ 63.

298 *Rysman WDT,* Table 1.

299 Dr. Rysman determines the "effective rate" by calculating the total mechanical royalty payments from a streaming service in a given year (regardless of whether that payment was driven by percentage-of-revenue fees, per-user fees, or varied by month) and then dividing this total payment by the number of streams for that service. (*Rysman WDT,* ¶ 62.) Examination of the data underlying Dr. Rysman's calculations indicates that these data exclude non-compensable plays (*i.e.*, short plays known as skips). Thus, the reported effective per-play rates are effective rates per compensable play. For the reasons described in footnote 3 above, comparing current effective rates per compensable play with the Copyright Owners' proposed $0.0015 per compensable play is invalid because skips are compensable plays under the Copyright Owner's proposal. As discussed in footnote 151 above, a more appropriate comparison would be between current effective compensable rates and $0.0018 per play = $0.0015 × 1.2.

300 *Rysman WDT,* ¶ 66.

[redacted] Copyright Owners' proposal of $0.0015 per play, does so only because it includes many services with [redacted]:[301]

- Without acknowledging that the service shut down in 2015, Dr. Rysman calculates that Rara's S3 service had a per-play rate of [redacted] in that year, which is based on less than [redacted] in royalties and approximately [redacted] streams, equivalent to [redacted] percent of total streams in 2015.[302]
- Dr. Rysman calculates that 7Digital had an effective per-play rate of [redacted] in 2014, which is based on [redacted] in royalties and approximately [redacted] streams, equivalent to [redacted] percent of total streams in 2014.
- Dr. Rysman calculates that Da Capo Music had a per-play rate of [redacted] n 2014, which is based on approximately [redacted] in royalties and [redacted] streams, equivalent to [redacted] of total streams in 2014 based on Dr. Rysman's backup data.
- As noted in the Introduction, the 2014 effective per-play rate of [redacted] calculated by Dr. Rysman for Steinway is based on [redacted] of royalties and [redacted] streams, as indicated by Dr. Rysman's backup data.

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301 The numbers reported in the bullet points below are reported and/or derived from data included in Dr. Ryman's backup materials (NMPA00001670.xlsx).

302 Kimberly Alt, "Best Streaming Music Service: Spotify vs Rhapsody vs Pandora vs Google Music vs Rdio vs Beats vs Napster," SafeSmartLiving, November 30, 2016, *available at* http://www.safesmartliving.com/spotify-vs-rhapsody-vs-pandora-vs-google-music-vs-rdio-vs-mog/, site visited December 17, 2016.

There is no basis for concluding that these [redacted] are consistent with a healthy streaming industry: the services paying these rates have been unsuccessful as indicated by their trivial streaming counts.

178. Another problem with Dr. Rysman's approach of focusing on individual services' effective per-play rates is that these rates exhibit very substantial variation from service to service and from year to year. The standard deviation of the per-play rates across all service-year observations (N = 109) that Dr. Rysman has analyzed in Figure 7 is $0.012, nearly eight times the magnitude of Copyright Owners' proposal of $0.0015 per play.[303] In 2014 alone, the standard deviation across the services considered by Dr. Rysman (N = 31) was $0.022, or about 14.5 times the magnitude of Copyright Owners' proposed per-play rate.[304] Simply put, all Dr. Rysman's analysis demonstrates is that, when one considers niche as well as mainstream services, the effective per-play rates paid by different services vary tremendously.

179. A more meaningful approach to examining the effective per-play rates in the industry is to calculate the overall weighted average per-play rate that has been paid by all interactive services. Doing so better reflects the rates paid by the services that account for the vast majority of streams. Figure 4 below reports the weighted-average musical works mechanical royalty rates for advertising-supported and subscription-based services, and it reveals that Copyright Owners' proposal of $0.0015 per play is [redacted]

303 *Rysman WDT* backup materials (NMPA00001670.xlsx).

304 The standard deviation is $0.0014 in 2012, $0.0021 in 2013, and $0.0051 in 2015.

[redacted][305].

For example, Copyright Owners' proposal of $0.0015 per play is [redacted] the 2015 average per-play musical works mechanical rate of [redacted][306] It should also be recalled that this comparison very likely understates the true degree to which Copyright Owners' proposal would raise royalty rates because that proposal has a greater-of structure and expands the scope of what is considered to be a compensable play.

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305 Dr. Rysman omits the effective per-play rates for 2016 from Table 1 of his written direct testimony. Where data are available in Dr. Rysman's backup materials, I have calculated the per-play rates for 2016. *Gans WDT,* Table 6 presents the same 2016 effective per-play rates. The [redacted] Copyright Owners' proposal of $0.0015 per play. [redacted] 2016 per-play rate is based on the first half of 2016. (*Rysman WDT* backup materials; NMPA00001670.xlsx.) [redacted] effective per play rate in 2016 is [redacted] Copyright Owners' proposed rate. [redacted] 2016 per-play rate is based on the first half of 2016. (*Rysman WDT* backup materials; NMPA00001670.xlsx.) And [redacted] per-play rate is [redacted] 2016 per-play rate is based on the first four months of 2016. (*Rysman WDT* backup materials; NMPA00001670.xlsx.)

306 This calculation is based services analyzed by Dr. Rysman in his written direct testimony plus advertising-supported and trial services. (*Rysman WDT* backup materials; NMPA00001670.) The numbers reported in the text differ slightly from those reported in footnote 3 above, which relies on the data that Dr. Eisenach uses.

Figure 4: Weighted average historical per-play mechanical royalties based on Dr. Rysman's data [RESTRICTED]

180. Still another problem with Dr. Rysman's methodology for calculating effective per-play rates is that it is based on disequilibrium outcomes. Specifically, he uses numbers of streams per subscriber that do not reflect industry trends. Dr. Rysman himself observes that

[redacted].[307] He also observes that [redacted] tend to pay higher rates.[308]

181. Figure 4 above demonstrates that the weighted-average, effective per-play rate [redacted]. The stream-weighted average per-play mechanical rate [redacted] between 2012 and 2015. Incorporating time trends, as Dr. Eisenach does in his analysis of Pandora's agreements with record companies, would lead to the conclusion that the rates should be [redacted] Copyright Owners' proposal.

182. Lastly, and closely related, Dr. Rysman ignores his own claims that streaming services are "deferring profits" and even losing money now because they are investing in the prospect of earning profits in the future.[309] Thus, by Dr. Rysman's own argument, the fact that some interactive streaming services may have operated in the past while paying effective per-play rates above Copyright Owners' proposed rate does *not* imply that streaming services could ever earn profits if they had to pay the proposed rate in the future. In fact, even though it has paid effective per-play rates *below* Copyright Owners' proposed rate, Spotify has failed to earn a profit to date. Dr. Rysman provides no evidence that it would ever be profitable for Spotify or any other interactive streaming service to pay Copyright Owners' proposed rates.[310]

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307 See, *e.g.*, *Rysman WDT*, ¶ 66 [redacted]).

308 *Rysman WDT*, ¶ 64.

309 *Rysman WDT*, § III.

310 Dr. Rysman focuses on Rhapsody. (*Rysman WDT*, ¶ 65.) He also emphasizes that Rhapsody is a long-established service. (*Rysman WDT*, ¶ 65.) However, Rhapsody was unprofitable between 2012 and 2015, and it incurred net losses of $12.2 million in 2012,

B. DR. RYSMAN'S ANALYSIS OF THE 801(B)(1) OBJECTIVES IS FLAWED

183. Dr. Rysman argues that Copyright Owners' royalty proposal achieves the 801(b)(1) objectives. As I discuss below, Dr. Rysman's analysis of each of the extent to which Copyright Owners' proposed royalty rates attain the 801(b)(1) objectives is unsound.

1. Maximize Availability: Dr. Rysman's analysis of investment effects is biased and unfounded.

184. Dr. Rysman takes the position that higher royalty rates will always induce songwriters to create a greater number of more appealing songs and that lowering the royalty rate will fail to maximize availability.[311] At the same time, he claims that "[a]s long as some services are making these investments [in providing interactive streaming services], consumers are well served."[312] This claim has no basis in sound economics.

185. Dr. Rysman ignores the widely recognized benefits of competition as well as the consumer benefits of variety that arise from the differentiation among interactive music streaming services. Economists and public policy makers have long recognized that competition delivers benefits to consumers in the form of lower, cost-based prices,

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$14.7 million in 2013, $21.3 million in 2014, and $35.5 million in 2015. (RealNetworks, Inc. Form 10-K for the Period Ending December 31, 2015, filed February 29, 2016 , *available at* http://investor.realnetworks.com/secfiling.cfm?filingID=1046327-16-72&CIK=1046327, site visited December 27, 2016; RealNetworks, Inc. Form 10-K for the Period Ending December 31, 2012 , filed March 18, 2013, *available at* http://investor.realnetworks.com/secfiling.cfm?filingID=1046327-13-8&CIK=1046327, site visited December 27, 2016.)

311 *Rysman WDT*, ¶ 69.

312 *Rysman WDT*, ¶ 70.

greater innovation and variety, and/or improved product and service quality.[313] It is also widely recognized that innovation competition and dynamic efficiency make especially important contributions to consumer welfare. Competition among interactive streaming services has led to many innovations' being brought to market.[314]

186. More broadly, there are important dimensions of differentiation among various *interactive* services, and a given consumer may strongly prefer one service over the other.[315] For example one industry commentator notes that "while Spotify relies on its intelligent music recommendation and discovery as a draw and Apple pushes people toward its service with major album exclusives, Amazon is touting Music Unlimited's tight integration with its Echo devices and Alexa voice assistant as the real differentiator here."[316] Tidal, having a strong connection with certain artists, allows subscribers early

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313 Robert B. Ekelund, Jr. and Robert D. Tollison (1997), *Microeconomics: Private Markets and Public Choice* (5th ed.), Boston: Pearson/Addison Wesley, at 97 ("Economic efficiency means that, under competitive conditions, the net value of society's scarce resources is maximized…a competitive market creates a maximum of net social value."); U. S. Federal Trade Commission, *Guide to Antitrust Laws, available at* http://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws, site visited January 27, 2017 ("Aggressive competition among sellers in an open marketplace gives consumers — both individuals and businesses — the benefits of lower prices, higher quality products and services, more choices, and greater innovation."); *National Society of Prof. Engineers v. United States,* 435 U.S. 679 (1978) at 695 ("The assumption that competition is the best method of allocating resources in a free market recognizes that all elements of a bargain -- quality, service, safety, and durability -- and not just the immediate cost, are favorably affected by the free opportunity to select among alternative offers.").

314 *Katz WDT*, ¶ 38.

315 As Dr. Eisenach states, interactive streaming services "are differentiated by the size of the music library available to the users, the types of additional service options available, and other features." (*Eisenach WDT*, ¶ 49.)

316 Dan Seifert, "Amazon's full on-demand streaming music service launches today," The Verge, October 12, 2016, *available at*

access to buy concert tickets and also has exclusive rights to various albums when they are first released.[317] Slacker differentiates itself from other interactive services by providing news updates as well as ESPN radio.[318] These benefits from innovation and product differentiation would be lost—and consumers would not be well served—if higher royalty rates drove most services from the marketplace.

187. Although Dr. Rysman asserts that the principal mechanism by which royalty rates affect availability is through influence on songwriters' and publishers' economic incentives, economics clearly identifies a tradeoff between incentives for content creation and incentives for investment in distribution: there is a range of rates over which a higher royalty rate tends to increase the former, while reducing the latter. Changes in the amount of music consumption provide the best practical index of the net effect of these two opposing forces on the resulting availability of creative works. This is so because changes in consumption levels bake in consumers' weighting of changes in composition quality, distribution quality, and performance quality.

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http://www.theverge.com/2016/10/12/13244158/amazon-music-unlimited-launch-echo-availability-price, site visited December 16, 2016.

317 Other ways in which Tidal differentiates itself from other interactive services include the app's ability to play music videos and live-stream concerts, along with its superior audio quality. (Xiomara Blanco, "Spotify vs. Tidal: 4 reasons I now prefer Jay-Z's music streaming service," July 18, 2016, *available at* https://www.cnet.com/news/spotify-vs-tidal/, site visited December 17, 2016.)

318 See, Himanshu Goenka, "Music Streaming Service Comparison: Amazon, Apple, Pandora, Slacker Radio, Spotify," *International Business Times*, October 30, 2016, *available at* http://www.ibtimes.com/music-streaming-service-comparison-amazon-apple-pandora-slacker-radio-spotify-2439160, site visited December 17, 2016.

See also, Expert Report of Glenn Hubbard, November 1, 2016, ¶ 2.17 ("Interactive streaming products continue to see further differentiation via unique features and customized pricing. Points of differentiation include sound quality, on-demand flexibility, and portability.").

188. The evidence in this regard is clear. There is widespread agreement that streaming has increased overall paid music consumption.[319] In other words, the current rate levels have promoted increasing availability.

2. Afford Fair Return/Fair Income

189. Dr. Rysman interprets "a fair rate of return to mean that when a copyright is used more intensively, the copyright owners should see increased returns."[320] He then asserts that this interpretation of fairness points to the use of per-play and per-user rates.

190. There are several deficiencies with this argument, many of which I already address in Section II. In particular, enhanced usage can be expected to lead to greater customer willingness to pay for streaming services and, ultimately, higher revenues, which translates into greater compensation for Copyright Owners. Indeed, as I explain in Section VI.B below, overall royalty revenues from streaming services have been increasing substantially as demand for streaming services has shifted outward. In addition, it is my understanding that, conditional on the overall size of the royalty pool, payments are made proportional to consumption of each musical work. It follows that musical works with a greater number of plays will earn relatively more compensation under any structure for determining the overall pool.

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319 *Katz WDT*, ¶¶ 62, 87. Dr. Eisenach spends considerable time explaining that "overall music consumption has never been higher," "music consumption is expanding," "music streaming is gaining traction in all age groups," "brand awareness for interactive music streaming services is high," and "in recent years interactive streaming has increased substantially." (*Eisenach WDT*, ¶¶ 54-62.) See also, *Goldman Sachs Report* at 4.

320 *Rysman WDT*, ¶ 73.

3. Reflect Relative Roles: Dr. Rysman's Analogy to Netflix is Inapt

191. In discussing the third statutory objective, Dr. Rysman notes that prices that emerge in a "free and well-functioning market" are likely to reflect the relative contributions of the negotiating parties.[321] If by "well-functioning" Dr. Rysman means an effectively competitive market, then I agree with his statement. (If, however, Dr. Rysman would consider markets in which prices are significantly distorted by the exercise of market power to be well-functioning, then I would not.) Dr. Rysman then goes on to observe that the content costs of Netflix have increased, and he concludes that this fact demonstrates that, while content providers were willing to provide their content at low cost in the early days of video streaming, now that video streaming has matured, the content providers are no longer willing to do so.[322] Based on this single example, Dr. Rysman concludes that he "would expect content providers in the interactive streaming space to also raise prices to services if this market operated as an efficient free market."[323]

192. This analogy, however, is entirely misplaced. Based on my experience analyzing the video creation and distribution sector, the increase in Netflix's costs had little or nothing to do with a shift from Netflix's being a new, uncertain service to an established one (as Dr. Rysman appears to suggest). Rather, it was due to a change in the service offering (now one that includes significant amounts of exclusive content) and a

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321 *Rysman WDT*, ¶ 84.

322 *Rysman WDT*, ¶¶ 87-88.

323 *Rysman WDT*, ¶ 88.

dramatically changed competitive landscape.[324] In short, Dr. Rysman's analogy to Netflix in no way supports his claim that interactive services should now pay higher mechanical royalty rates as a result of a shift from streaming being a new emerging industry to one that has become established.

4. Minimize Disruptive Impact

193. Copyright Owners have proposed a mechanical rate equal to the greater of $0.0015 per play and $1.06 per user.[325] As noted in the Introduction above, if it were enacted, this proposal would [redacted] the royalty rates paid by interactive services for mechanical licenses from their current level.[326] Economic principles clearly indicate that such an increase in marginal cost would both reduce streaming industry profits and be passed on to consumers in the form of higher prices or reduced quality levels (see Section C above). Dr. Rysman undertakes no analysis of the impact of such a price increase on the demand for streaming services or for music in general. He offers no valid

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324 See, *e.g.*, Demitrios Kalogeropoulos, "It'll Cost Netflix Inc. $8 Billion to Run Its Service in 2017," *The Motley Fool*, January 31, 2017, *available at* https://www.fool.com/investing/2017/01/31/itll-cost-netflix-inc-8-billion-to-run-its-service.aspx, site visited February 9, 2017.

325 *Copyright Owners' Proposed Rates and Terms* at B-6.

326 The current effective rate is [redacted] per compensable play. (Calculated from *Eisenach WDT*, Table 10 and accompanying backup.) As also described in the Introduction (footnote 3 above): (a) Copyright Owners propose a greater-of structure, so that the effective per-play rate under their proposal may exceed $0.0015; the average effective per-play rate has been trending downward and, thus, would be less than [redacted] in the future; and (c) the [redacted] per-play rate applies to a smaller percentage of plays than would the $0.0015 per-play rate because Copyright Owners' proposal would expand the scope of compensable plays to include all plays, in contrast to many current direct agreements that exclude short plays known as "skips" (*e.g.*, plays less than 30 seconds in length).

basis to assert that [redacted] the existing mechanical royalty rates would not disrupt the viability of the streaming services, which are not currently making a profit.

194. Instead, Dr. Rysman asserts that, in his opinion, "the Copyright Owners' rate proposal will not be disruptive and will hardly be noticed within such a dynamic industry."[327] He further asserts that the proposed rates will not lead to market disruption because services can enhance revenue (*e.g.*, by raising rates to subscribers) or reduce costs.[328] However, economic principles clearly indicate that neither action would fully offset the loss of profits and that both types of action would harm consumers directly (*e.g.*, by raising prices and/or lowering the quality of existing services). Moreover consumers would be harmed by the loss of profits if it caused existing services to exit the industry or deterred new services from entering the industry.

195. Dr. Rysman speculates that "the current mechanical royalty structure may have been disruptions [sic] to the publishing and songwriting industry." [329] However, he presents no evidence to support this speculation.[330] Moreover, as I explain in the next section, the music industry is performing well under the current rates (despite the current absence of streaming profits) and there is therefore no basis to undertake a massive

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327 *Rysman WDT*, ¶ 92.

328 *Rysman WDT*, § VI.D.

329 *Rysman WDT*, ¶ 110.

330 Instead of providing any data or meaningful economic analysis, Dr. Rysman observes that there has been substitution among formats and he does not see any reason to doubt the "perception" among rights holders that there has been industry disruption. (*Id.*, § VI.D.2.)

change to the current rate levels and structure, particularly a change that would impose further costs on services that have yet to earn a profit.

C. DR. RYSMAN'S CLAIMS REGARDING "COST ABSORPTION" CONTRADICT FUNDAMENTAL ECONOMIC PRINCIPLES.

196. Dr. Rysman claims that, because "the services are not yet in the profit-seeking phase of their development… a reasonable response to increased production costs would be for services to simply absorb the costs at this time without passing them through to consumers or offsetting expense reductions elsewhere."[331] His claim is contrary to basic economic principles.[332]

197. This point can be seen by applying the model in a paper of mine that Dr. Rysman himself has cited in prior testimony before the Copyright Royalty Board.[333] In that paper, Carl Shapiro and I examine a two-period model in which firms compete in a market subject to network effects. Because of the network effects—under which a firm's product becomes more valuable to any given consumer the greater the number of other consumers using that product—an increase in first-period sales tends to raise second-period profits. Thus, firms have incentives to invest in first-period output which serves as

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331 *Rysman WDT,* ¶ 101, footnote omitted.

332 Dr. Rysman's error appears to be that he confuses a firm's decision to sacrifice short-run profits in order to maximize the net present value of long-run profits with a decision to abandon the objective of profit maximization.

333 Michael L. Katz and Carl Shapiro (1986) "Technology Adoption in the Presence of Network Externalities," *Journal of Political Economy*, **94**(4): 822-841, as cited in *In re Determination of Royalty Rates and Terms for Ephemeral Recording and Digital Performance of Sound Recordings (WEB IV)*, Docket No. 14-CRB-0001-WR (2016-2020), Testimony of Marc Rysman, Ph.D., February 23, 2015, SX Ex. 094-RR, footnote 9 (hereinafter *Katz and Shapiro (1986)*.).

an installed base that boosts second-period profits. We show that, as a result, a firm may go so far as to set its first-period price below its first-period marginal cost in order to increase its installed base.[334] However, even in that situation, an increase in firms' first-period costs will lead to higher equilibrium prices in the first period—a result that is directly contrary to Dr. Rysman's assertion.[335] Dr. Rysman has provided no explanation for why an otherwise economically rational interactive service would choose to ignore an increase in its costs rather than adjust its behavior to maximize the expected net present value of its profits.

198. More generally, most economic models predict positive pass-through such that an increase in a firm's marginal costs can be expected to cause the firm to raise prices.[336] These "price" increases can take the form of increased nominal prices or decreased product quality. Although the pass-through rate can vary depending on a variety of factors, the rate is always greater than zero except in extreme cases.[337] I am unaware of any sound evidence that interactive streaming is one of these extreme cases, and Dr. Rysman does not provide any. Moreover, Copyright Owners' proposal would raise the

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334 *Katz and Shapiro (1986)* at 825, 834, and 837.

335 *Katz and Shapiro (1986)* at 837 (see, in particular, equations (15) and (16) and the surrounding discussion). In oligopolistic markets, such as the one modeled in *Katz and Shapiro (1986)*, a supplier's equilibrium price in each period is typically an increasing function of both its marginal cost and the marginal costs of its rivals.

336 See, *e.g.*, Jeremy I. Bulow and Paul Pfleiderer (1983) "A Note on the Effect of Cost Changes on Prices," *Journal of Political Economy*, **91**(1): 182-185.

337 For example, in the textbook model of perfect competition, a firm that faces a perfectly elastic demand curve generally will not change its price in response to a change that increases the costs *solely* of that firm. One exception is that, if the cost increase results in the firm's having average variable costs greater than the price, then the firm will be unprofitable and cease operations, which could be considered equivalent to a price increase.

marginal costs of all services, further reducing the likelihood that the services would find it profit-maximizing to pass through none of the proposed cost increases.[338] Indeed Dr. Rysman explains this logic in his testimony:[339]

> With regard to paid subscription platforms, the industry as a whole could increase the rates charged to consumers in order to generate more revenue per subscriber. A change in market-wide royalty rates such as this would affect all participants in a similar way. Collectively the services could pass through the rate change to consumers without affecting their price points relative to each other. [Footnotes omitted.]

VI. THE 2012 SETTLEMENT IS THE BEST AVAILABLE BENCHMARK

199. In my initial testimony, I concluded that the 2012 Settlement is an excellent benchmark for rate-setting in the present proceeding. I reached this conclusion based on several facts, including: it involved similar (and, in some cases, the same) parties negotiating over an identical set of rights; an examination of how the industry has changed since the agreement was reached demonstrates that it is not an outdated benchmark and that the industry is performing well; and the settlement was negotiated in the shadow of an 801(b)(1) rate-setting proceeding and there do not appear to have been any asymmetries in market power or bargaining positions that would have distorted the outcome in favor of interactive streaming services.

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338 For example, as discussed in the previous footnote, a single supplier in a perfectly competitive market will not pass its cost increase through to consumers when it is the only firm to suffer a cost increase. It cannot raise its price because it would lose all of its sales to other firms, which continue to charge the original equilibrium price. However, an industry-wide cost increase will generally lead to a higher equilibrium price in a perfectly competitive market because all firms will raise their prices together.

339 *Rysman WDT,* ¶ 94.

200. Drs. Eisenach and Gans make two related arguments in an attempt to avoid confronting the implications of the success of the 2012 Settlement, which is that the 2012 Settlement provides the best available benchmark and that, at a minimum, the status quo has to be taken into account in assessing disruption:

- *Temporary Concessions to "Jump Start" Streaming.* Both Drs. Eisenach and Gans assert that the negotiated rates negotiated in previous settlements were always intended to be transitory efforts to promote nascent streaming business models.[340]

- *Intended lack of precedence.* According to Dr. Gans, "participants expressly stated that the rates and terms should not be precedential, and that new rate proceedings should look at the matter *de novo*."[341]

201. By focusing solely on the parties' intentions—rather than also considering the effects of the parties' actions—Drs. Eisenach and Gans miss the fact that, whatever the intentions of the parties to the 2012 Settlement, subject to minor modification and

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340 *Eisenach WDT*, ¶ 19, footnote omitted citing Luiz Augusto Buff & Nicholas Spanos, *New Five-Year Standards for Mechanical Licenses*, 7 Berklee College Music Business Journal 14, 14 (July 2012), *available at* http://www.thembj.org/2012/07/a-bundle-of-mechanicals/, site visited 31 December 31, 2016 ("the parties agreed to set up various discounted rate structures, many customized to specific envisioned business models, in an acknowledged effort to 'jump-start' these novel music business models."); *Gans WDT*, ¶ 56 (the participants in the Phonorecords I and II proceedings "envisioned [the prevailing rate structures] to have a very specific and time-limited application"); *Gans WDT*, ¶ 57 (the rate structures were "intended to boost a handful of proposed business models to see whether any would catch on.").

341 *Gans WDT*, ¶ 55, citing Final Determination of Rates and Terms, *In the Matter of Mechanical and Digital Phonorecord Delivery Rate Determination Proceeding*, Docket No. 2006-3 CRB DPRA, Copyright Royalty Board. January 26, 2009, at 4536 ("In any future proceedings under 17 U.S.C. 115(c)(3)(C) and (D), the royalty rates payable for a compulsory license shall be established de novo.").

possible downward adjustment, its rate structure and levels satisfy the 801(b)(1) statutory objectives and are reasonable. From the perspective of economics, this fact is relevant even if one is undertaking a *de novo* determination of statutory rate structure and levels.[342] Stated another way, from the perspective of economics, the issue is not whether the 2012 Settlement serves as a "precedent."[343] Rather, the question is what we learn from observing industry performance under the current terms of the statutory royalty scheme, which are based on that settlement.[344]

202. Other economic experts and I addressed this question in our written direct testimony, where we concluded that the statutory rate system is generally working well to meet the statutory objectives.[345] As I demonstrate in the remainder of the present section, the claims of Drs. Rysman and Eisenach to the contrary are unfounded. Specifically, I show that: Drs. Eisenach and Rysman draw unsound conclusions from entry by interactive streaming services; Dr. Eisenach's assertion that streaming has limited royalty payments is misleading; and Dr. Rysman's assertion that falling effective per-play rates represent a "fundamental problem in the market" is not supported by sound economics.

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342 To the extent that Dr. Gans is making a legal—rather than economic—argument, I leave it to others to address his claims.

343 Indeed, from the perspective of economics, the fact that the 2012 Settlement was not viewed as precedential might even be a virtue because it was not subject to a forward-shadow effect.

344 It is notable in this regard that Drs. Eisenach and Rysman refer to measures of industry performance under the terms of the 2012 Settlement to argue in favor of their conclusions. Although we disagree on the lessons one should draw from the data, we all appear to agree that the data are relevant to the determination of reasonable rate levels and structure.

345 *Katz WDT*, § III.D. See also Expert Witness Statement of Gregory Leonard, November 1, 2016, §§ VI-IX; Written Direct Testimony of Leslie Marx, October 31, 2016, § X.

A. DRS. EISENACH AND RYSMAN DRAW UNSOUND CONCLUSIONS FROM ENTRY BY INTERACTIVE STREAMING SERVICES.

203. Drs. Eisenach and Rysman point to entry of new interactive streaming services as indicative of the health of the streaming industry and, implicitly, as support for their claim that mechanical royalty rates should be substantially higher than present levels. For example, Dr. Eisenach claims that "the rapid pace of entry into the interactive streaming business suggests that, under current royalty structures, interactive streaming is generating economic profits."[346] Similarly, Dr. Rysman asserts that "[a]nother indication of the strong prospects for the future of the streaming industry is the market entry of three of the most successful and high profile companies in the world—Alphabet (Google), Amazon, and Apple."[347] As I will now discuss, there are important flaws in Drs. Eisenach's and Rysman's reasoning.

204. As an initial matter, each one presents only half of the story: they examine service entry but do not analyze exit. As I noted in my written direct testimony, many interactive streaming services have exited from the marketplace.[348] Rdio filed for bankruptcy in November 2015; Pandora purchased the company for its engineers and core technology.[349] After not being able to find a buyer, Rara was shut down in 2015.[350]

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346 *Eisenach WDT,* ¶ 8. See also, *id.* ¶ 51 and Table 2.

347 *Rysman WDT,* ¶ 107.

348 *Katz WDT*, ¶ 65.

349 Andrew Flanagan, "Rdio's Bankruptcy: Inside a Failing Music Streaming Service," Billboard, September 26, 2015, *available at* http://www.billboard.com/articles/business/7519014/rdio-bankruptcy-story-how-ithappened-failing-streaming-service, site visited December 16, 2016.

350 Tim Ingham, "Rara Will Be Shut Or Sold as CEO Jez Bell Exits," MusicBusiness Worldwide, March 13, 2015, *available at* http://www.musicbusinessworldwide.com/rara-

Beatport announced its shutdown in May 2016.[351] MOG was purchased by Beats in 2012 and shut down in 2014.[352] Muve was purchased by Deezer and subsequently shut down in February 2015.[353] Music Unlimited was shut down by Sony in March 2015.[354] Beats Music was shut down by Apple in November 2015 after acquiring it 18 months earlier.[355] Numerous other services were acquired or exited in 2015, including Aurous, Bop.fm, Boomio, Zune, WiMP, Soundtracking, ShareBeast, and Tapely.[356] Moreover, there is no reason to expect that exit is only a thing of the past. Indeed, elsewhere in his report Dr. Rysman states that, "given the intense and growing level of competition in the interactive

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must-be-sold-or-closed-as-ceo-exits/, site visited December 16, 2016; and Kimberly Alt, "Best Streaming Music Service: Spotify vs Rhapsody vs Pandora vs Google Music vs Rdio vs Beats vs Napster," SafeSmartLiving, November 30, 2016, available at http://www.safesmartliving.com/spotify-vs-rhapsody-vs-pandora-vs-google-music-vs-rdio-vs-mog/, site visited December 17, 2016.

351 Alexander Bouten, "An Update on Beatport Services," *Festivalling*, May 11, 2016, *available at* http://www.festivalling.com/uncategorized/update-beatport-services/, site visited February 10, 2017.

352 Dante D'Orazio, "MOG streaming music service shut down," *The Verge*, June 1, 2014, *available at* http://www.theverge.com/2014/6/1/5770370/mog-streaming-music-service-shut-down, site visited December 17, 2016.

353 Mike Dano, "AT&T's Cricket to replace Muve Music with Deezer; will finish CDMA shutdown Sept. 15," *Fierce Wireless*, January 8, 2015, *available at* http://www.fiercewireless.com/wireless/at-t-s-cricket-to-replace-muve-music-deezer-will-finish-cdma-shutdown-sept-15, site visited December 17, 2016.

354 Hannah Karp, "Sony Bails Out of Music Streaming," *The Wall Street Journal*, January 29, 2015, *available at* http://www.wsj.com/articles/sony-bails-out-of-music-streaming-1422481528, site visited December 17, 2016.

355 Abigail Tracy, "Apple Is Shutting Down Beats Music on November 30," Forbes, November 13, 2015, *available at* http://www.forbes.com/sites/abigailtracy/2015/11/13/apple-beats-music-headphones-shutting-down-dr-dre/#d91d970558f7, site visited December 16, 2016.

356 Glenn Peoples, "In Memoriam: The Music Services, Brands, and Companies That Left Us In 2015," Billboard, January 4, 2016, *available at* http://www.billboard.com/articles/business/6828956/in-memoriam-music-companies-2015-obit, site visited January 3, 2017.

streaming market, it is likely enough that many of the services we see in the market today will fail."[357] The observed pattern of entry and exit is fully consistent with interactive streaming services' earning competitive rates of return on average over the long run. Stated another way, examination of the full picture reveals that the existence of recent entry does not imply that interactive streaming is generating economic profits.

205. Another flaw in Drs. Eisenach's and Rysman's reasoning is that several of these services—including Alphabet, Amazon, and Apple, which Dr. Rysman singles out for attention—are not offered by pure-play streaming companies. This fact is relevant because it is difficult to assess the relevant financial health of the streaming portion of the business. Indeed, Dr. Rysman makes this point elsewhere in his written direct testimony.[358]

206. Moreover, pure-play interactive services generally have been unprofitable to date.[359] And, in particular, many of the pure-play streaming services in Dr. Eisenach Table 2—in which he lists "select entrants into interactive streaming"—have not been profitable:

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357 *Rysman WDT*, ¶ 49, internal footnote omitted.

358 *Rysman WDT*, ¶ 29 ("The entry of Apple, Amazon, and Google into music streaming appears to be part of competition between their entire 'eco-systems,' rather than just a decision related to music alone." (footnote omitted)).

359 *Katz WDT*, § III.D.

- As I noted in my initial testimony, Spotify lost $192 million (€173 million) in 2015 and has lost money every year since 2010, with total 2010-2015 losses amounting to $697 million (€554 million).[360]

- Rhapsody incurred net losses of $12.2 million in 2012, $14.7 million in 2013, $21.3 million in 2014, and $35.5 million in 2015.[361]

- Pandora lost over $27 million during the 11 months ending 2013, $30 million in 2014, and nearly $170 million in 2015.[362]

- Tidal lost $28 million in 2015, more than double its losses in 2014.[363] One industry observer explained that:[364]

> Tidal claims to be paying the vast majority of its revenue — and five times the amount per play as Spotify — back to artists and labels in the form of royalties. That sounds generous and

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360 *Katz WDT*, ¶ 65 (citing Tim Ingham, "Spotify Revenues Topped $2BN Last Year as Losses Hit $194M," musicbusinessworldwide.com, May 23, 2016, available at http://www.musicbusinessworldwide.com/spotify-revenues-topped-2bn-last-year-aslosses-hit-194m/, sited visited October 3, 2016. See also SPOTCRB0005864.)

361 RealNetworks, Inc. Form 10-K for the Period Ending December 31, 2015, filed February 29, 2016 , *available at* http://investor.realnetworks.com/secfiling.cfm?filingID=1046327-16-72&CIK=1046327, site visited December 27, 2016; RealNetworks, Inc. Form 10-K for the Period Ending December 31, 2012, filed March 18, 2013, *available at* http://investor.realnetworks.com/secfiling.cfm?filingID=1046327-13-8&CIK=1046327, site visited December 27, 2016.

362 Pandora Media Inc. 2016 Annual Report at 68, available at http://investor.pandora.com/Cache/1001215554.PDF?O=PDF&T=&Y=&D=&FID=1001215554&iid=4247784, site visited December 30, 2016.

363 Colin Stutz, "Tidal Posts $28M Net Loss in 2015, More Than Double From Year Before," Billboard, September 13, 2016, *available at* http://www.billboard.com/articles/news/7510245/tidal-posts-28-million-net-loss-2015-jay-z, site visited December 30, 2016.

364 Parker Hall, "10 Reasons Tidal Is So Doomed, Not Even Jay-Z Can Save It," *Digital Trends*, May 19, 2016, *available at* http://www.digitaltrends.com/music/why-tidal-is-doomed-to-fail/, site visited December 16, 2016.

> progressive, until one realizes that larger music services don't pay more because they simply can't afford to."

- SoundCloud lost $44 million (€39 million) in 2014 and $52 million (€51.2 million) in 2015.[365]

- Deezer lost nearly $32 million (€27.2 million) in 2014.[366]

207. As Dr. Rysman explained, a firm may well be losing money at current royalty rates but entering and/or continuing to operate in an attempt to develop a profitable business model in the future. Dr. Eisenach recognizes that, given dynamic considerations, entry today does not imply that interactive streaming is profitable today or, indeed, that it ever will be.[367] However, he does not develop the implications of this fact—acts of entry today are not indicators that current royalty rates are unreasonably low. In other words, the conclusion that Dr. Eisenach appears to be drawing from his discussion of entry simply does not follow as a matter of economic logic.

208. In summary, rather than demonstrating that the current royalty rates should be increased—which is what Drs. Eisenach and Rysman are proposing—the observation of competition with ongoing entry and exit suggests that the current percentage royalty payments promote competition and the availability of music. And the general lack of

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365 Tim Ingham, "Soundcloud 'May Run Out of Cash This Year' As It Posts €51M Loss," musicbusinessworldwide.com, January 5, 2017, *available at* *http://www.musicbusinessworldwide.com/soundcloud-may-run-out-of-cash-this-year-as-it-posts-e51m-loss/*, site visited January 12, 2017.

366 Stuart Dredge, "Music streaming service Deezer abandons IPO plans," *The Guardian*, *available at* https://www.theguardian.com/technology/2015/oct/28/deezer-ipo-music-streaming, site visited December 30, 2016.

367 *Eisenach WDT*, ¶ 53.

streaming industry profits to date suggests that, if anything, the royalty rates are too high, not too low.

B. STREAMING HAS BENEFITED COPYRIGHT OWNERS.

209. There is broad agreement that music consumption has been increasing and that much of the increase is due to the introduction and continued growth of streaming services.[368] For example, Dr. Eisenach quotes industry sources to note that "overall music consumption has never been higher."[369] Similarly, Mr. Bart Herbison, Executive Director of the Nashville Songwriters Association International ("NSAI"), states that "[m]any millions of Americans **are** using legal services to get their music, and overall consumption of music is at an all-time high and rising."[370] Mr. Steve Bogard, a non-performing songwriter and former President of the NSAI, states "[t]he demand for music has never been higher."[371]

210. Drs. Eisenach and Rysman and fact witnesses testifying on behalf of Copyright Owners also attribute, in part, the increase in music output to the success of streaming services.[372] For example, Dr. Eisenach states that "music streaming revenues have increased steadily since 2005, while download revenues began declining in 2012."[373] Dr.

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368 See, *e.g., Eisenach WDT,* § IV.C.

369 *Eisenach WDT,* ¶ 55.

370 Witness Statement of Bart Herbison, October 28, 2016, ¶24 (emphasis in the original).

371 Witness Statement of Steve Bogard, October 28, 2016, ¶ 4.

372 See also, *Katz WDT*, § III.D.

373 *Eisenach WDT*, ¶ 45 and Figure 5.

Eisenach also states that "[d]ata from Nielsen on total audio streams show that in recent years interactive streaming has increased substantially."[374] Dr. Rysman states that:[375]

> The number of paid subscribers has grown from 3 million in 2011 to 39 million in August 2016, which is equal to a compound annual growth rate ("CAGR") of over 73%. The number of audio streams has grown from 49 billion in 2013 to 145 billion in 2015 which is equal to a CAGR of approximately 72%.

Mr. Bogard states that "[t]he streaming platforms are showing unprecedented growth, and are rapidly replacing sales of physical product and permanent downloads."[376]

211. Despite acknowledging these positive aspects of streaming, Dr. Eisenach and fact witnesses testifying on behalf of Copyright Owners attempt to portray streaming as having contributed to a decline in publisher and songwriter royalty income. Dr. Eisenach asserts that "the transition from downloads to streaming appears to have further limited royalty payments" and he cites a magazine article referencing performance royalties.[377] Mr. David Israelite, President and Chief Executive Officer of the National Music Publishers' Association ("NMPA"), asserts that "…mechanical royalties paid to music publishers have continued to decrease year after year in recent history, to a point where I

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374 *Eisenach WDT,* ¶ 62.

375 *Rysman WDT,* ¶ 103.

376 Witness Statement of Steve Bogard, October 28, 2016, ¶ 4.

377 *Eisenach WDT,* ¶ 69, quoting John Seabrook, "Will Streaming Music Kill Songwriting?" *The New Yorker* (Feb. 8, 2016), *available at* http://www.newyorker.com/business/currency/will-streaming-music-kill-songwriting, site visited December 23, 2016.

have never seen mechanical royalties, as a percentage of revenues paid to the music publishing industry, lower than they are presently."[378]

212. These analyses and statements, however, are incomplete and do not make appropriate comparisons. The relevant comparison for purposes of assessing trends in Copyright Owners' revenue (and, thus, changes in the rewards they earn for creating musical works) must focus on the *total* royalties publishers and songwriters receive. A songwriter writes the same song for both the musical works mechanical royalties and musical works performance royalties. The financial returns to songwriting thus depend on the sum of the mechanical and musical works royalties that the songwriter receives (among other revenue sources). Changing the name of a royalty source, or shifting a given amount of money from mechanical to performance royalties, does not change a songwriter's financial incentives to create musical works. In short, from the perspective of economics, it is necessary to consider both mechanical and performance royalties in order to assess whether the 801(b)(1) objectives are being attained.

213. Focusing on recent trends in mechanical royalty amounts as Copyright Owners' witnesses do is uninformative with regard to assessing industry health and even misleading. First, it is uninformative because mechanicals are a small portion of total

[378] Witness Statement of David M. Israelite, October 28, 2016, ¶ 68. Other fact witnesses for Copyright Owners make similar claims. (See, *e.g.*, Witness Statement of Peter Brodsky, October 28, 2016, ¶ 110; Witness Statement of David Kokakis, dated October 28, 2016, ¶ 54; Witness Statement of Annette Yocum, October 28, 2016, ¶ 55.)

publishing industry revenues.[379] Second, and more important, focusing solely on mechanicals when comparing the royalties generated by the sale of physical copies and permanent digital downloads to the royalties generated by interactive streaming is misleading because sales of physical copies and permanent digital downloads generate only mechanical royalty revenue for Copyright Owners—they do not generate performance royalty revenue.[380] By contrast, interactive streaming generates both mechanical and performance royalties for Copyright Owners. While mechanical royalty revenue [redacted] between 2013 and 2015, performance royalty revenue [redacted] over the same time period.[381] Combined, these two revenue streams have [redacted] in 2015. In other words, to the extent that these data reflect a shift from sales to interactive streams, that shift has been beneficial for the music publishing industry. In addition, synchronization and other revenues [redacted], respectively over the same time period.[382] The end result is that total publishing industry revenues

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379 In 2015, mechanical revenue overall accounted for just [redacted] of total publishing industry revenue, while performance revenue accounted for [redacted] of the total (NMPA00001424.xlsx [redacted]']).

380 United States Copyright Office, "Copyright and the Music Marketplace," February 2015, *available at* http://copyright.gov/policy/musiclicensingstudy/copyright-and-the-music-marketplace.pdf, site visited June 3, 2016 (hereinafter *Report on Music Licensing*) at Appendix D. See also, "Rate Charts," Harry Fox Agency, *available at* https://www.harryfox.com/find_out/rate_charts.html, site visited January 16, 2017.

381 NMPA00001424.xlsx [redacted']].

382 NMPA00001424.xlsx [redacted']].

[redacted] between 2013 and 2015.[383]

214. The Goldman Sachs report on which Dr. Gans relies concurs with the finding that streaming has benefitted rights holders, and it explains:[384]

215. Copyright Owners have presented no evidence that the current interactive streaming musical works mechanical royalty rates have unreasonably suppressed the supply of music. As described above, there is agreement that *consumption* of music—which relies on there being an ample *supply* of music—has never been greater. Perhaps the closest Copyright Owners come to presenting evidence regarding the supply of music is that several fact witnesses for Copyright Owners assert that the number of songwriters has fallen and attribute this decline, at least implicitly, to the decline in mechanical

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383 NMPA00001424.xlsx [redacted].

384 *Goldman Sachs Report* at 4. (Cited in *Gans WDT,* footnote 39.)

royalties. However, these witnesses generally rely on anecdotes and unsourced empirical claims.[385]

216. Anecdotal evidence, primarily from witnesses associated with the NSAI and the Nashville songwriting scene, does not establish that the number of songwriters overall has declined, and such evidence certainly does not establish that mechanical royalty payments associated with streaming music are responsible for any declines. Indeed, more systematic evidence indicates that the total number of songwriters is not declining.[386] Moreover, as just described, music publishing revenues are increasing and many industry participants credit streaming with being an important reason for this increase. Hence, if music publishers are passing these revenues through to songwriters, then the financial rewards to songwriting are rising and are doing so, in part, due to streaming.

217. In addition to discussing royalty amounts, Dr. Eisenach makes assertions regarding unbundling effects. He observes that the rise of digital downloading, most

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385 Witness Statement of Steve Bogard, October 28, 2016, ¶ 41 ("The availability of publishing deals has significantly decreased… Most estimates say that there are less than one-quarter of the number of professional songwriters than there were just 10 years ago."); Witness Statement of Bart Herbison, October 28, 2016, ¶ 31:

> By NSAI's approximation, roughly 80% to 90% of songwriters in Nashville who earned a full-time living from royalty payments on songs released by recording artists are no longer signed to a publishing deal, no longer writing songs as a profession and no longer receiving royalties from new titles. The decline in Nashville is consistent with trends in the songwriting industry nationwide.

Expert Report of Lawrence S. Miller, October 30, 2016, ¶ 11 ("Many of the hit songwriters I have known over the last 20 years are no longer in the business."); Witness Statement of Liz Rose, October 28, 2016, ¶ 22 ("Over the last few years, successful songwriters are being driven out of the industry because they cannot maintain a living under the current mechanical rate structure.").

386 *Katz WDT*, ¶ 60; Expert Witness Statement of Gregory Leonard, November 1, 2016, ¶ 94.

notably Apple iTunes, made it feasible for consumers to unbundle music albums and purchase individual songs instead.[387] He asserts that streaming continues this trend albeit at a slower pace, and he suggests that this is somehow problematic.[388] As an initial matter, it is important to recognize that streaming did not create unbundling; digitization—in particular, Apple iTunes—did. And such unbundling likely benefits consumers, who now have more options to consume the music they are most interested in. The fact that "a greater share of the music purchased is being purchased as singles rather than albums" indicates that consumers prefer to purchase unbundled music.[389] Not only is streaming not the cause of the problem, to the extent there is a problem at all, streaming may be the solution. One recent article explained that "[w]here downloads and playlists favored the lone song, streaming gives the artist and the album a fighting chance again."[390] The reason is that consumers can more easily sample a wider range of songs.

218. This ease of sampling a wide variety of songs also may serve to promote creativity. Because consumers can more easily explore new music:[391]

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387 *Eisenach WDT*, ¶¶ 43, 65.

388 *Eisenach WDT*, ¶¶ 68-69.

389 *Eisenach WDT*, ¶ 68.

390 Jon Pareles, "With Streaming, Musicians and Fans Find Room to Experiment and Explore," *The New York Times*, December 22, 2016, *available at* http://mobile.nytimes.com/2016/12/22/arts/music/streaming-album-bon-iver-kanye-west-frank-ocean.html?contentCollection=weekendreads&action=click&pgtype=Homepage&clickSource=story-heading&module=c-column-middle-span-region&region=c-column-middle-span-region&WT.nav=c-column-middle-span-region&_r=0&referer=http://www.nytimes.com/, site visited December 25, 2016.

391 Jon Pareles, "With Streaming, Musicians and Fans Find Room to Experiment and Explore," *The New York Times*, December 22, 2016, *available at* http://mobile.nytimes.com/2016/12/22/arts/music/streaming-album-bon-iver-kanye-west-

> Musicians don't need to think so exclusively about what sounds, beats and structures the radio gatekeepers will allow; they can get poetic, political, sonically weird or all of the above. While big and glossy still works, it's just possible that odd and heartfelt will, too.

Thus, streaming may generate incentives to create a more diverse array of content.

C. THE COMBINATION OF FALLING PRICES AND INCREASING CONSUMPTION IS FULLY CONSISTENT WITH A HEALTHY INDUSTRY.

219. Dr. Rysman identifies what he considered to be a "fundamental problem in the market, namely that while demand for streaming is rising among users, who are demanding to stream more and more music, rightsholders are receiving less and less in effective royalties per-play [sic]."[392] Dr. Rysman's argument is neither theoretically nor empirically sound. Rather than being a fundamental problem, the fall in effective royalties per play is fully consistent with the successful working of competitive market forces to generate increased benefits for Copyright Owners and consumers.

220. It is useful to consider the empirical flaws first. To support his contention that there is a problem, Dr. Rysman points to calculations he reported in Figures 4 and 5 of his testimony showing that [redacted].[393] However, Dr. Rysman fails to observe that, while [redacted] the *total* revenues

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frank-ocean.html?contentCollection=weekendreads&action=click&pgtype=Homepage&clickSource=story-heading&module=c-column-middle-span-region&region=c-column-middle-span-region&WT.nav=c-column-middle-span-region&_r=0&referer=http://www.nytimes.com/, site visited December 25, 2016.

392 *Rysman WDT*, ¶ 57.

393 *Rysman WDT*, ¶ 57. Dr. Rysman focuses on Spotify's royalty rates while Dr. Eisenach excludes Spotify rates from his primary calculations. (*Eisenach WDT*, ¶ 150.)

attributable to streaming—and, thus, the total royalties paid to Copyright Owners by streaming services—have increased substantially. For instance, calculations based on the Harry Fox Agency ("HFA") data on which Dr. Rysman relied reveal that, [redacted][394]

221. More broadly, as just discussed in Section VI.B above, publisher royalty revenues have been increasing over the past few years, in part due to the rise in streaming. Thus, although effective per-play rates have been declining in recent years, the overall payments that have resulted from the 2012 Settlement have dramatically increased. This is the far more relevant metric for assessing whether the current rate structure has been fairly compensating rights owners and promoting the creation and availability of musical works.

222. Turning to the theoretical flaws in Dr. Rysman's claim, economic principles clearly demonstrate that the combination of falling prices and increasing consumption is fully consistent with a healthy industry. Rather than indicating a problem, the evidence indicates that interactive streaming is a new, more cost-effective means of distributing music to users, and that upstream and downstream prices have adjusted as the industry has evolved. Indeed, it is precisely because quality-adjusted prices have fallen as

394 For example, [redacted] (NMPA0001670.xlsx.)

interactive services have invested in innovations that benefit users that the consumption of music has been rising. At the same time, competition has limited interactive services' ability to raise prices. In short, as distribution costs have fallen and service quality risen, competition has driven firms to pass these benefits on to consumers.[395] Consumers are not the only ones to benefit from these lower quality-adjusted prices. So too, do Copyright Owners. Specifically, the lower prices make it possible to serve new segments of consumer demand and, thus, to increase the base on which royalties are collected. It is for this reason that total musical works royalties have risen even as effective per-play rates have fallen.

VII. CONCLUSION

223. Drawing on my training and experience as an economist, my examination of the public records of earlier proceedings, my analysis of the relevant industries, and my examination of the evidence produced in the present proceeding—including the written direct testimony of Copyright Owners' economic experts Drs. Eisenach, Gans, and Rysman—I continue to reach the conclusions stated in my written direct testimony: namely, that the royalty structure and rates of the 2012 Settlement provide an economically sound basis on which to set the statutory rates going forward, and that only minimal adjustments to this benchmark (*e.g.*, removing the mechanical-only royalty floors) are required to determine reasonable rates. I also find that Drs. Rysman's and Gans's arguments regarding the appropriate structure of rates are seriously flawed, and

[395] In the limit, a perfectly competitive industry will pass 100 percent of an industry-wide cost reduction on to consumers.

that Drs. Eisenach's and Gans's benchmark analyses are unreliable and yield rate recommendations that are far above reasonable levels.

VIII. TECHNICAL APPENDIX

A. TRANSLATION OF DR. EISENACH'S METHODS INTO MY NOTATION

224. Dr. Eisenach expresses his approach algebraically. Because his notation is incomplete, it is useful to introduce a notational scheme that can be more readily extended to cover all of the relevant quantities. Let the variable R_{jk}^{s} denote the royalty rate paid by a type-*s* service (*e.g., s* is equal to *I* for an interactive service and *s* is equal to *N* for a non-interactive streaming service) for the rights of type *jk*, where: (a) *j* equals *C* when the right involves a musical composition and *j* equals *R* when the right involves a recording, and (b) *k* is equal to *P* when the right is a performance right, *k* is equal to *M* when the right is a mechanical right, and *k* is equal to *T* when it covers the total set of rights necessary. For example, R_{CP}^{I} is the royalty rate paid by an interactive streaming service for the performance rights for a musical composition. Let

$$V^{s} \equiv (R_{RM}^{s} + R_{RP}^{s}) / (R_{CM}^{s} + R_{CP}^{s})$$

denote the ratio of the total royalty paid by a service to record companies for the rights to sound recordings divided by the total royalty paid to publishers for the rights to musical compositions.

225. Dr. Eisenach introduces several pieces of notation:

- MR_{MW} = Mechanical Rate for Musical Works
- SR_{IS} = Sound Recording Rate for Interactive Streaming (All In)
- SR_{NIS} = Sound Recording Rate for Non-Interactive Streaming (Performance Only)
- $RV_{SR/MW}$ = Relative Value of Sound Recording to Musical Works Rights
- PR_{MW} = the public performance royalty rate for musical works

226. In my notation,

- $MR_{MW} = R^I_{CM}$
- $SR_{IS} = R^I_{RM} + R^I_{RP}$
- $SR_{NIS} = R^N_{RP}$
- $RV_{SR/MW} = V^s$, where Dr. Eisenach assumes that V^s is constant (or nearly so) across some range of services (*i.e.*, this number does not vary with *s*)
- $PR_{MW} = R^I_{CP}$.

227. Dr. Eisenach's Method 1 is based on the formula:[396]

$$MR_{MW} = (SR_{IS} - SR_{NIS}) / RV_{SR/MW} . \quad \text{(A.0)}$$

In my notation, Dr. Eisenach's Method 1 is equivalent to:

$$R^I_{CM} = (R^I_{RM} + R^I_{RP} - R^N_{RP})/V^s , \quad \text{(A.1)}$$

which can be rewritten as

$$R^I_{CM} = (R^I_{RM} + R^I_{RP})/V^s - R^N_{RP}/V^s . \quad \text{(A.2)}$$

Using the fact $R^I_{RT} = R^I_{RM} + R^I_{RP}$ and $R^N_{RT} = R^N_{RP}$, equation (A.2) can also be expressed as

$$R^I_{CM} = (R^I_{RT} - R^N_{RT})/V^s . \quad \text{(A.3)}$$

228. Dr. Eisenach's Method 2 is based on the formula:[397]

$$MR_{MW} = (SR_{IS} / RV_{SR/MW}) - PR_{MW} . \quad \text{(A.4)}$$

In my notation, his formula is:

$$R^I_{CM} = (R^I_{RM} + R^I_{RP})/V^s - R^I_{CP} . \quad \text{(A.5)}$$

396 *Eisenach WDT*, ¶ 140.

397 *Eisenach WDT*, ¶ 142.

229. Rearranging terms, equation (A.5) can be written as

$$V^s = R^I_{RT} / R^I_{CT} \qquad \text{(A.6)}$$

Using the fact that $V^I = R^I_{RT} /(R^I_{CT}$, equation (A.6) becomes an identity when the ratio is the actual ratio for interactive streaming services (*i.e.*, when *s* = *I*). In other words, this approach would be internally consistent *if* Dr. Eisenach used appropriate values for: (a) $(R^I_{RM} + R^I_{RP})$; (b) R^I_{CP}; and (c) V^I. However, as I discuss at length in Section II above, throughout his analysis Dr. Eisenach does not use appropriate values.

230. It is important to recognize that Dr. Eisenach's two methods are in general inconsistent with one another. Setting formulas (A.2) and (A.5) equal to one another and eliminating terms appearing on both sides of the equation reveals that Methods 1 and 2 yield the same answer if and only if

$$R^N_{RP} / R^I_{CP} = V^s . \qquad \text{(A.7)}$$

There is no reason to expect this formula to hold in general even if, counterfactually, Dr. Eisenach were correct that V^s is constant across relevant services. For example, note that, when V^s is a constant, a change in the nature of the noninteractive services relative to interactive services will tend to affect the left-hand side of the equation but not the right. Hence, it is an arithmetical impossibility for the formula to hold both before and after the change.

B. FIXED POINT FORMULA

231. In this section, I derive the formula for the value of the mechanical royalty rate for musical works such that, using that value to derive the all-in sound recording royalty rate that would result from bargaining between record companies and interactive services, one would obtain that same value for the mechanical royalty rate for musical works when applying the formula underlying Dr. Eisenach's Table 18 to the newly computed value of the all-in sound recording royalty rate.

232. Let F denote the fixed-point value of the per-subscriber musical works mechanical royalty rate for which the formula solves. Recall that V^S denotes Dr. Eisenach's adjustment ratio. It is also necessary to specify certain other parameter values. Let α denote the average sound recording total royalty paid by interactive services per user per month, β denote the average musical works performance royalty per user per month, γ denote the average musical works mechanical royalty per user per month paid by interactive services, and λ denote the record company's bargaining power parameter (*i.e.,* what fraction of a marginal change in total surplus is captured by the record company rather than the service).

233. Expressed in terms of this notation, the fixed-point value satisfies

$$F = \frac{\alpha - \lambda(F - \gamma)}{V^S} - \beta \ ,$$

where $\lambda(F-\gamma)$ is the correction factor that accounts for the effect of changes in the musical works mechanical royalty on the sound recording total royalty. This equation can be rewritten as

$$F = \frac{\alpha + \lambda\gamma - \beta V^S}{V^S + \lambda}.$$

C. SHAPLEY VALUES WITH COMPLEMENTS AND SUBSTITUTES

234. A Shapley value analysis can be used to illustrate some of the consequences of the lack of competition among rights holders, such as record companies. For the sake of illustration, assume that there is only one interactive service but *N* rights holders, each of which is "must have" in that the interactive service cannot be commercially viable unless its users have access to the catalogs of those rights holders. In this case, each party has veto power: if any of the parties refuses to participate, there is no viable service. In this situation, the Shapley value for each party is equal to that of any other party—the total profits from interactive streaming will be divided up equally among the *N*+1 parties (*i.e.*, the *N* rights holders and the one streaming service provider). This implies that the service will receive *1*/(*N*+1) of the total profits and rights holders will receive the fraction *N*/(*N*+1) of the total profits.[398] For example, if there are two rights holders, then Shapley bargaining would lead to royalty rates that result in the service's receiving one third of the total profits and the rights holders' collectively receiving two thirds of the total profits. If, instead, there were three rights holders, then the service would receive one fourth of the total profits and the rights holders would collectively receive three fourths of the total profits. These examples illustrate the paradoxical nature of complementary

[398] The parties' Shapley values can be calculated as follows. Because each participant has veto power, its marginal contribution is equal to 100 percent of the total profit when it is the last party to join the coalition and zero otherwise. When there are *N*+1 parties, any given party is the last member to join the coalition 1/(*N*+1) of the time. The Shapley value is equal to the average of the marginal contributions across all possible combinations, *i.e.*, 1/(*N*+1) of the total.

suppliers: the greater the number of must-have rights holders, the *higher* the resulting royalty rates.

235. Now, suppose, instead that each of the *N* rights holders were a perfect substitute for the other rights holders in that once the service's users have access to one rights holder's catalog, there are no additional benefits generated by access to additional rights holders' catalogs. In this case, the service will receive $N/(N+1)$ of the total profits and rights holders will collectively receive $1/(N+1)$ of the total profits.[399] For example, if there are two rights holders, then Shapley bargaining would lead to royalty rates such that the service would receive two thirds of the total profits and the rights holders would collectively receive the other third. If there were three rights holders, then the service would receive three fourths of the total profits and the rights holders would collectively receive one fourth of the total profits. When the rights holders are substitutes for one another, an increase in the number of rights holders leads to increased competition and lower royalty rates.

236. The two scenarios above—perfect complements and perfect substitutes—give rise to very different outcomes and illustrate the importance of competition. When there are three rights holders, the case of perfect complements splits profits 25:75 between the service and the rights holders, while the case of perfect substitutes splits profits 75:25.

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[399] The parties' Shapley values can be calculated as follows. The marginal contribution of the service is zero if it goes first and equal to 100 percent of the total profit otherwise. The service's Shapley value is equal to the average of the marginal contributions across all possible combinations. Because the service goes first only $1/(N+1)$ of the time, its average marginal contribution is $N/(N+1)$ of the total. The rights holders receive the remaining portion of the total profits, *i.e.*, $1/(N+1)$.

Of course, each of these scenarios is an extreme example and the truth likely lies somewhere in the middle. To see the effects of less extreme structures, suppose there is one service and two rights holders. Let T equal to the total industry profits when the three parties all cooperate and let σT denote the joint profits that the service and one rights holder can earn by cooperating with each other but not the remaining rights holder. In the perfect complements case, $\sigma = 0$. In the perfect substitutes case, $\sigma = 1$. In practice, σ could take an intermediate value. The royalty rate emerging from Shapley bargaining will result in the service's earning $T(1+\sigma)/3$ and the rights holders collectively earning $T(2-\sigma)/3$.[400] In this case, the service would earn anywhere from one third (when $\sigma = 0$) to two thirds (when $\lambda = \sigma$) of the total industry profits. Relative to a situation in which there is one service and one rights holder and they each earn half of the industry profits, the addition of a second rights holder could either raise or lower the percent of industry profits that the service earns depending on the degree to which the rights holders substitute for one another.

[400] To see this, note that the service will earn zero if it goes first, σT if it goes second, and T if it goes third. Each of these orders happens 1/3 of the time. Hence, the average value of the service's marginal contribution is $T(1+\sigma)/3$.

PUBLIC VERSION

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
The Library of Congress
Washington, D.C.

In the Matter of: Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords III)	Docket No. 16-CRB-0003-PR (2018-2022)

DECLARATION OF MICHAEL L. KATZ

I, Michael L. Katz, declare under penalty of perjury that the statements contained in my Written Rebuttal Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief. Executed this 15th day of February, 2017, in San Francisco, California.

Michael L. Katz

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Appendix A: Materials Considered

	Date	Bates Number(s)
Previous Report		
Phonorecords III, Written Testimony of Michael L Katz , November 1, 2016, and materials considered therein (Appendix C)	11/2016	--
Produced Documents		
[redacted]		
Filings		
Broadcast Music, Inc v Pandora Media, Inc , Nos 13 Civ 4037(LLS), 64 Civ 3787(LLS), 2013 WL 6697788 (S D N Y Dec 19, 2013)	12/2013	--
Deposition of Michael Herring, CFO of Pandora Media, Inc , January 25, 2017	01/2017	--
Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services, 73 Fed Reg 4080	01/2008	--
In re Petition of Pandora Media, Inc , United States of America v American Society of Composers, Authors, and Publishers, Nos 12 Civ 8035(DLC), 41 Civ 1395(DLC), 2013 WL 5211927 (S D N Y Sept 17, 2013)	09/2013	--
In the Matter of DIGITIAL PERFORMANCE RIGHT IN SOUND RECORDINGS AND EPHEMERAL RECORDINGS, Docket No 2005-1 CRB DTRA, Rebuttal Testimony of Charles Ciongoli	09/2006	--
In the Matter of Mechanical and Digital Phonorecord Delivery Rate Determination Proceeding, Docket No 2006-3 CRB DPRA, Copyright Royalty Board, Final Determination of Rates and Terms	01/2009	--
In the Matter of Vivendi, S A and EMI Recorded Music, FTC, Statement of Bureau of Competition Director Richard A Feinstein	09/2012	--
National Society of Prof Engineers v United States, 435 U S 679 (1978)	04/1978	--
Phonorecords I, Final Rule	01/2009	--
Phonorecords III, Brief Statement of Proposed Rates and Terms of National Music Publishers' Association and the Nashville Songwriters Association International	07/2016	--
Phonorecords III, Copyright Owners' Proposed Rates and Terms	11/2016	--
Phonorecords III, Expert Report of Anindya Ghose	11/2016	--
Phonorecords III, Expert Report of Glenn Hubbard (including exhibits and appendices)	11/2016	--
Phonorecords III, Expert Report of Jeffrey A Eisenach, Ph D (including backup materials)	10/2016	--
Phonorecords III, Expert Report of Joshua Gans (including backup materials)	10/2016	--
Phonorecords III, Expert Report of Jui Ramaprasad	11/2016	--
Phonorecords III, Expert Report of Lawrence S Miller	10/2016	--
Phonorecords III, Expert Report of Marc Rysman, Ph D (including backup materials)	10/2016	--
Phonorecords III, Expert Witness Statement of Gregory Leonard	11/2016	--
Phonorecords III, Motion to Adopt Settlement Industry-wide	10/2016	--
Phonorecords III, Spotify USA Inc 's Memorandum in Opposition to Copyright Owners' Motion to Compel Production of Documents Concerning Record Label Ownership Equity in Spotify	01/2017	--
Phonorecords III, Witness Direct Testimony of Michael Herring	10/2016	--
Phonorecords III, Witness Statement of Annette Yocum	11/2016	--
Phonorecords III, Witness Statement of Bart Herbison	11/2016	--
Phonorecords III, Witness Statement of David Kokakis	10/2016	--

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	Date	Bates Number(s)
Phonorecords III, Witness Statement of David M Israelite	10/2016	--
Phonorecords III, Witness Statement of Gregg Barron	10/2016	--
Phonorecords III, Witness Statement of Justin Kalifowitz	10/2016	--
Phonorecords III, Witness Statement of Liz Rose	10/2016	--
Phonorecords III, Witness Statement of Peter Brodsky	10/2016	--
Phonorecords III, Witness Statement of Steve Bogard	10/2016	--
Phonorecords III, Written Direct Testimony of Leslie Marx (including appendices)	11/2016	--
Phonorecords III, Written Direct Testimony of Will Page	11/2016	--
Phonorecords III, Written Direct Testimony of Zahavah Levine	11/2016	--
Phonorecords III, Writtern Rebuttal Testimony of Michael Herring	02/2017	
Statement of the Department of Justice on the Closing of the Antitrust Division's Review of the ASCAP and BMI Consent Decrees, Department of Justice (Aug 4, 2016), available at https://www justice gov/opa/file/882111/download, site visited January 27, 2017	08/2016	--
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