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

14-CRB-0001-WR (2016-2020)

Determination of Royalty Rates for Digital Performance in Sound Recordings and Ephemeral Recordings (Web IV)

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PUBLIC VERSION

Witness for SoundExchange, Inc.

CONTENTS

I. INTRODUCTION

A. Assignment and Qualifications

1. I have been asked by Munger, Tolles & Olsen LLP, counsel for SoundExchange, Inc. ("SoundExchange"), to provide economic analysis on two sets of issues. First, I was asked to examine the development and behavior of webcasters, particularly those using digital sound recordings pursuant to statutory licenses under 17 U.S.C. §§ 112(e) and 114. This examination pertains in some part to questions that the Copyright Royalty Judges have invited the parties to address in this proceeding: (1) What is the importance, if any, of the presence of economic variations among buyers and sellers? (2) Should royalty rates embody any form of economic "price discrimination" in order to reflect the statutory hypothetical marketplace? Second, building off this analysis, I was asked to examine whether statutory webcasting is substitutive of or promotional of sales of phonorecords or other streams of record company revenue. I understand that a possible substitutive or promotional or interference effect would be relevant to the Judges' considerations under the governing statute in this proceeding. I was further asked to prepare this report explaining my opinions and the bases for them.

2. I am an applied microeconomist and Vice President for NERA Economic Consulting ("NERA"), an economic consulting firm based in White Plains, New York. I am based in NERA's Washington, D.C. office. I earned a B.Sc. in Applied Mathematics and Economics from Brown University and a M.A. and Ph.D. in Economics from Harvard University. I have taught economics courses at the graduate and undergraduate level at several institutions. I have written and spoken publicly on a number of economic issues, including intellectual property issues.

3. At NERA, my practice has focused on the valuation of intellectual property, on antitrust related matters, and on the calculation of economic damages in commercial disputes. A substantial quantity of my economic research, including my Ph.D. dissertation and my testimony in several legal intellectual property disputes has focused on the recorded music industry, with respect to both physical and digital distribution. My CV, including a list of my recent testimony, is attached as **Appendix 1**.

4. I reserve the right to supplement my opinions should additional information or testimony become available to me.

B. Sources Relied Upon

5. In preparing this report, I (or economists or staff working under my direction) have reviewed information from a variety of sources. These include documents and data produced by SoundExchange, publicly available disclosures from a number of firms, and other market research. In addition, I have relied on my experience and training as an applied microeconomist and my experience in the economic analysis of markets in general and the recorded music industry in particular. A list of the documents I have reviewed and relied upon in preparing this report is appended as **Appendix 2**.

C. Summary of Conclusions

6. Based on my research to date, I have reached the following conclusions:

a) Statutory webcasting has been a vibrant, growing industry throughout the past several years and is expected to continue as such – it has experienced sustained entry and growth throughout the prior license period.

b) At the same time, statutory webcasting has become dominated by one service – Pandora, which has chosen, as many rational economic actors do, to forego short-run profitability in favor of user and market share growth. This strategy has largely been successful, as demonstrated by Pandora's dominance of the market and its financial and stock market performance.

c) I find little support for the suggestion that statutory webcasting serves a primarily promotion role to other record label revenue sources. Instead, evidence suggests, at both a macro and micro level, that statutory webcasting does *not* tend to increase digital downloads and the record is clear that statutory webcasters, such as Pandora, serve to cannibalize industry revenues earned through directly-licensed interactive streaming services. This competition, which has been further biased by Pandora's cost advantage relative to other statutory webcasters, will only become more important in the future, as

the industry continues moving away from physical and digital sales and towards online music streaming.

II. AN OVERVIEW OF THE WEBCASTING BUSINESS

A. Webcasting Growth

7. Over the past several years, as the demand and use of music streaming services has undergone steady growth, the webcasting industry has seen significant entry and growth, leading to diverse and varied offerings fitting the various tastes of consumers. As the industry has evolved, firms have innovated and replicated successful practices in order to gain market share. The industry has continuously seen the development of new products and entry and survival of new competitors, demonstrating that there is a robust and viable market in which competitors are able to earn sufficient economic return.

1. An Overview of the Webcasting Industry

8. There are many different ways that consumers today can stream music. As I understand it, so-called "interactive" digital music services are not eligible for use of the statutory performance license at issue in this proceeding and the remaining services – so-called "non-interactive" digital music services – are eligible to operate pursuant to the statutory license, provided they meet other eligibility requirements provided by law.[1] I understand that there have been legal disputes in the past and there may be more in the future as to what makes a service "interactive." With respect to firms that stream music over the internet, services considered "interactive" (and therefore ineligible for the statutory license) such as Spotify, generally include on-demand functionality through which its users can select a particular sound recording to stream at a particular time. Notably, the service may not be purely on-demand – indeed Spotify has a feature that programs music to the consumer without direct interaction, but the existence of on-demand functionality renders at least that component of a service ineligible for the statutory license.

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[1] "SoundExchange Licensing 101", available at http://www.soundexchange.com/service-provider/licensing-101/ , accessed September 26, 2014.

9. "Non-interactive" services offer a broad range of options and strategies. On one end is entirely programmed radio where the user has control in only the most limited and generalized sense. Music on such programmed radio stations does not give the user control of any facet of the music or playback experience, including skipping tracks. On the other end of the spectrum is customized non-interactive webcasting. Customized non-interactive webcasting services (such as Pandora) may not let users pick a specific song at a specific time, but these services allow users broad levels of customization and personalization including seeding stations with artists or mixes of artists, pausing and skipping sound recordings, and providing ratings of their approval (thumbs up) or disapproval (thumbs down) of delivered music to help further customize the song selection on the station in the future.

10. As I will describe in more detail in the remainder of this report, these differences among music streaming services are important and help shape not only the licensing rates that they pay, but also the competition among them, both within and across classes of service. While all of these services, broadly speaking, can be considered music streaming companies, for the sake of clarity, I will refer to the full spectrum of non-interactive digital music services as "webcasters."

2. Webcasting and the Growth of Access Models

11. In recent years, the expanded use of and access to the internet has permitted new methods of music delivery that were previously unavailable to music listeners. Relative to historical distribution channels, online streaming services – including those employed by webcasters – allow greater delivery convenience at lower cost. This access expansion has expanded basic music offerings, for example by providing online simulcasts of radio stations otherwise unavailable in locations outside of geographically-circumscribed terrestrial delivery. In doing so, even non-interactive services expand the variety of music formats and music mix available for consumption.

12. Beyond this, customized non-interactive services expand upon this variety and give the user a greater level of control over the music delivered to them. As I describe in more detail in Section II.F, a service such as Pandora gives listeners much finer control of the format

and mix of music they consume, as customers can create narrowly-defined and continually evolving "stations," whose mix of music is responsive to each individual through the feedback they provide on which tracks they value. These customized streams – some of which can be cultivated over long periods of time – allow consumers more and more personal delivery of music, without the need to "lean forward" and select song after song. Interactive services provide the user with one degree more direct control, allowing the user to select which songs they wish to hear directly. However, this level of control comes at a cost – users cannot as easily "lean back" and simply enjoy music delivered to them; instead users must program the music they will hear. Taken together, music streaming services have created not just new distribution channels for traditional consumption of music but new products that create new forms of music consumption.

13. Although these categories broadly define the differences between the various music streaming services and their licensing regimes, these lines are increasingly blurred. In particular, customized non-interactive webcasters have increased users' abilities to customize their experience, both through enhanced personalization functionality and through the increased aggregation of user input over time leading to increasingly personalized song selection, while interactive streaming services (such as Spotify) have created pre-made playlists, radio components, and non-interactive channels of music delivery. This convergence is consistent with industry reports that music streaming services, moving forward, will need to provide appropriate choice and distribution channels for the various ways music is consumed.

14. Webcasters are also delivering music to new locations or with new levels of convenience and access. Traditionally, music was consumed at a fixed delivery point (a radio, a stereo) or at a mobile delivery point with limited ability for selecting music (a portable radio/boombox, a Walkman), or at a live concert. Listeners had some ability to arrange for music delivery at their location of choice and would sacrifice either control over the content (radio) or the convenience of specifying the content (portable device, say a CD player). Webcasters take advantage of the ubiquity of computers and smartphones in our lives to deliver music most anywhere and with greater control over content.

15. Today, music streaming services, including webcasters, are using technology to expand both the locations at which music is provided and the convenience with which content is selected. Delivery locations are being expanded in many directions, as I describe in Section II.D.1, not just through expanded car-based options but also through other media such as televisions and even home appliances like refrigerators.[2] Music is becoming convenient to consume regardless of location or time, and therefore has become a truly ubiquitous product. Streaming access models are creating not just new or more convenient delivery locations for traditional consumption of music but new products that create new forms of music consumption. In doing so, their products move further and further away from being just a replacement for terrestrial radio or the music store as a means of delivering music, providing an entirely different user experience than traditional terrestrial radio and physical or digital ownership as mechanisms for delivering music.

16. An additional principle in the expansion of webcasting away from the computer is that non-interactive services increasingly resemble interactive services and vice versa. In particular, non-interactive services are a close substitute for interactive services in applications or environments where full interactivity is not possible or optimized. For example, while driving a car, users may not have the freedom to be able to "lean forward" and actively choose track after track. Even if they could do so, the nature of the auto environment undermines the convenience of that functionality. In those situations in particular – environments in which streaming in general and statutory webcasting are expanding – there is relatively little difference between non-interactive streaming and interactive streaming. As discussed in more detail below, in these situations, the differences between statutory webcasting and interactive music streaming services begins to blur as they provide very similar services to users.

[2] John D. Sutter, "When Refrigerators Tweet and Washing Machines Text," CNN, January 7, 2011, available at http://www.cnn.com/2011/TECH/innovation/01/07/internet.connected.appliances/ , accessed September 26, 2014.

B. The Statutory Webcasting Industry is Prospering

1. There Has Been Consistent Entry in Webcasting

17. There has been consistent entry into music streaming in general and into statutory webcasting in particular in recent years. As an economic matter, unprofitable industries (or, more generally, industries that are expected to be unprofitable in the future) typically do not see extensive entry. Instead, standard economic principles indicate that entry occurs when potential new firms recognize a profit opportunity in an industry and take steps to enter and grab a share of "excess" economic profits.[3] While some webcasters have indicated that costs may be high relative to revenues, data on the entry and resiliency of webcasting services demonstrate that there has been steady and consistent growth, indicating profit opportunities continue to exist in the industry.

18. It is important to recognize that the absence of entry does not indicate an absence of a profit opportunity; there may well be any number of new entrants that would like to enter an industry to take advantage of a profit opportunity, but they are unable due to the existence of barriers to entry. These barriers to entry may take many forms, but they have the general result of limiting the number of competitors in an industry. In the statutory webcasting industry, however, there appear to be little or no significant barriers to entry. Instead, because of the compulsory licensing regime, any potential entrant which identified a potential profit opportunity can gain access to a content catalog, and, along with investments in the necessary infrastructure (sufficient internet and server bandwidth), would be able to launch a new webcasting service.

19. Economists recognize that in an industry with "free entry" (such as the webcasting industry), firms would be expected to earn (close to) zero economic profit – that is, to the extent there is an abnormal profit opportunity available in the industry (which would be shared, in some proportion, by existing firms), potential new entrants would identify this and

[3] For example, Varian states that "In an industry with free entry, profits will be driven to zero be new entrants: whenever profits are positive, there will be an incentive for a new firm to come in to acquire some of those profits" (where "profits" refers to economic profits and not accounting profits). Hal Varian, *Intermediate Microeconomics: A Modern Approach*, *4th Edition*, W. W. Norton and Company (1996), p. 391.

enter to take advantage of the opportunity. This would result in a new equilibrium (without an abnormal profit opportunity) with more firms in the industry. Similarly, if something happened to make the industry less profitable, firms would exit and, all else equal, this would lead to a new equilibrium (again without an abnormally low profit opportunity) but with fewer firms in the industry.

20. The first might happen as demand for webcasting services grow – the increased demand from users would be expected to allow existing firms to earn more profits from their services. This would, then, induce further entry until the new entrants have competed away the increased profits and overall profits (in the short and long run) have returned to a normal level. The second might happen, for example, if there were to be an increase in the cost of delivering content to users (either from increases in infrastructure costs or licensing costs). Some firms would find the new situation to be insufficiently profitable to continue operations and would exit the industry. This reduced competition would raise the remaining firms' profits back to normal levels.[4]

21. The streaming industry has seen a steady increase in new entrants. In the past few years, a number of new services launched including services from Google (Google Play Music All Access) and Apple (iTunes Radio). Sirius XM has even considered a greater emphasis on the music streaming industry regardless of the increased competition from services such as Pandora and Spotify.[5] Some of the major new entrants in the streaming business over the past decade are shown in **Table 1**. Not only have there been many entrants, but investors continue to pour money into the webcasting industry. Last year, investors placed $2.4 billion in the music industry, with about $839 million going into "Internet Radio" or "On-demand streaming audio

[4] Put differently, as an economic matter, one should not be concerned that higher licensing costs would cause the webcasting industry to collapse. Rather, as with any industry with low barriers to entry and exit of firms, an increase in costs may eliminate some marginal competitors from the industry, but the remaining firms would likely continue to exist in the new equilibrium industry structure with essentially the same expected profitability going forward.

[5] Claire Atkinson, "Sirius XM Could Veer Off Road to Fuel Growth," New York Post, September 11, 2014, available at http://nypost.com/2014/09/11/sirius-xm-could-veer-off-road-to-fuel-growth/ , accessed September 25, 2014.

and video" companies, including stock offerings by Pandora and venture capital rounds from other streaming music services.[6]

[6] Glenn Peoples, "Investors Put $2.4 Billion Into Music In 2013, Streaming Tops List," Billboardbiz, January 31, 2014, available at http://www.billboard.com/biz/articles/news/5893800/investors-put-24-billion-into-music-in-2013-streaming-tops-list , accessed October 1, 2014.

Table 1: Examples of New Music Streaming Entrants (2001-Present)[7]

Service	Launch
Rhapsody	December 2001
Pandora	July 2005
Slacker	March 2007
iHeartRadio	April 2008
Rdio	June 2010
Spotify	July 2011
Xbox Music	October 2012
Google Play Music All Access	May 2013
iTunes Radio	September 2013
Beats Music	January 2014
Amazon Prime Music	June 2014

22. Further, among statutory webcasters, data from SoundExchange demonstrate the extent of this entry. In 2010, there were 1,806 statutory licensees, 1,781 of which were

[7] Sources: Rhapsody: Benny Evangelista, "Music Firms Open Online Services, But Will Fans Pay?," SFGate, December 3, 2001, available at http://www.sfgate.com/business/article/Music-firms-open-online-services-but-will-fans-2845907.php , accessed September 26, 2014; Pandora: "Pandora," http://www.waldenvc.com/Pandora html , accessed September 26, 2014; Slacker: Alex Pham, "Slacker Launches On-Demand Music Service," Los Angeles Times, May 17, 2011, available at http://latimesblogs.latimes.com/music_blog/2011/05/slacker-launches-on-demand-music-service.html , accessed September 26, 2014; iHeartRadio: "iHeartRadio Includes Cumulus Stations," Simple Music Contracts, available at http://www.simplemusiccontracts.com/iheartradio-includes-cumulus-stations , accessed September 26, 2014; Rdio: Robin Wauters, "Spotify Who? Rdio Launches in the US and Canada, Lands More Indie Music Deals," TechCrunch, August 2, 2010, available at http://techcrunch.com/2010/08/02/rdio-public-launch/ , accessed September 26, 2014; Spotify: Charlie Sorrel, "Spotify Launches in the U.S. at Last," Wired, July 14, 2011, available at http://www.wired.com/2011/07/spotify-launches-in-the-u-s-at-last/ , accessed September 26, 2014; Xbox Music: "Introducing Xbox Music: The Ultimate All-in-One Music Service Featuring Free Streaming on Windows 8 and Windows RT Tablets and PCs," Microsoft News Center, October 14, 2012, available at http://www microsoft.com/en-us/news/press/2012/oct12/10-14xboxmusicpr.aspx , accessed September 26, 2014; Google Play Music All Access: Dominic Rushe and Charles Arthur, "Google Play Music All Access: Search Engine Giant Launches Rival to Spotify," The Guardian, May 16, 2013, available at http://www.theguardian.com/technology/2013/may/15/google-launches-music-streaming-io-developer-conference , accessed September 26, 2014; iTunes Radio: Lindsay Zoladz, "Apple Announces iTunes Radio Launch Date," Pitchfork, September 10, 2013, available at http://pitchfork.com/news/52237-apple-announces-itunes-radio-launch-date/ , accessed September 26, 2014; Beats Music: Miriam Coleman, "Beats Music Launching Streaming Service January 21st," RollingStone, January 11, 2014, available at http://www rollingstone.com/music/news/beats-music-launching-streaming-service-january-21st-20140111 , accessed September 26, 2014; Amazon Prime Music: Tom Warren, "Amazon Launches Streaming Music Service for Prime Members," The Verge, June 12, 2014, available at http://www.theverge.com/2014/6/12/5802898/amazon-prime-music-features-pricing , accessed September 26, 2014.

webcasters. By 2013, there were 2,547 statutory licensees, of which 2,516 were webcasters.[8] Put differently, in just three years, the number of webcasters grew by more than 40 percent.[9] As I describe in more detail below, this rapid entry has occurred even in the presence of a minimum statutory fee with increasing per-performance rates.

23. Despite the clear ability of firms to enter the webcasting space, the webcasting industry remains highly concentrated in terms of royalty payments. **Table 2** shows the top 10 webcasters in 2013 by royalty fee payments – these Top 10 webcasters comprise about [redacted] percent of all royalty payments.[10]

Table 2: Top 10 Statutory Webcasters Royalty Payments by Service (2013)

Rank	Licensee	Royalty Payments	Share
1	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]
7	[redacted]	[redacted]	[redacted]
8	[redacted]	[redacted]	[redacted]
9	[redacted]	[redacted]	[redacted]
10	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]

Source: SoundExchange Data. Note: As of 2014, I understand that [redacted] *no longer makes statutory payments.*

These figures demonstrate the extent to which [redacted] dominates the statutory webcasting space. It alone accounts for nearly [redacted] percent of all statutory webcasting royalty payments. [redacted] – which includes both the [redacted] and [redacted] entries in **Table 2** – accounts for only about [redacted] percent of [redacted]'s royalty payments.

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[8] SoundExchange Data.

[9] As discussed in more detail below, these figures show the net number of entrants, as some 2010 webcasters had left the webcasting space by 2013, and thus the gross number of entrants is even greater.

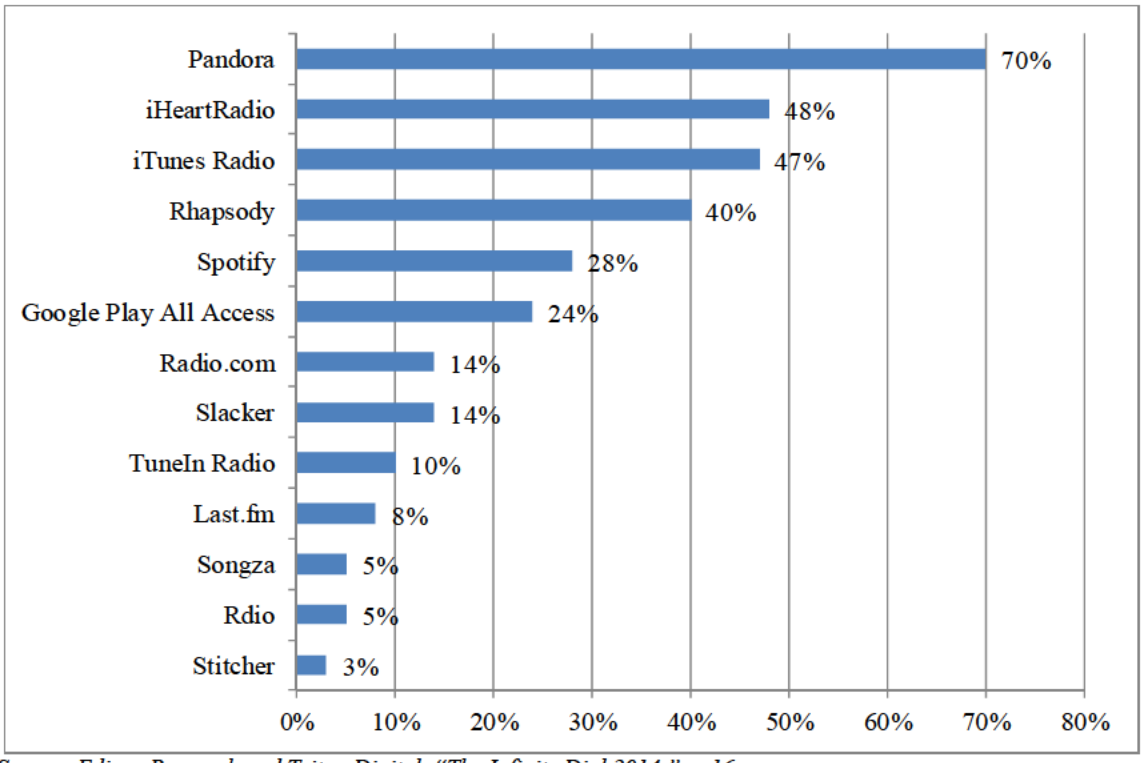
[10] See SoundExchange Data. The percentages are calculated based on the total royalties paid by licensees under SoundExchange's "Webcasting" license category.

24. Several factors may explain the high concentration in the statutory webcasting industry. First, it is likely that the largest webcaster benefits from both network effects and "lock-in" for its services.[11] The webcaster's large audience and ability to share stations among friends and users makes it more attractive to other users. Similarly, the fact that many users have invested in rating music on that service (an activity that cannot be easily transferred to a competing service without, in all likelihood, manually re-expressing the preferences) means that users, once they have "taught" the service what they like to hear, would face high switching costs from moving to a competing service. Second, branding plays a large role within the webcasting industry. As shown in **Figure 1** below, the top webcasters also generally have the highest brand awareness amongst consumers and it is likely that its high level of brand awareness places Pandora at an advantage relative to its competitors.[12]

[11] See, for example, Section III.B below.

[12] Pandora's 2013 10-K, for example, makes repeated mention of the importance of maintaining its brand, and of the risks it would encounter if it were faced with competitors with brand advantages compared to Pandora. [Pandora Media, Inc. Form 10-K for the fiscal year ended January 31, 2013 ("Pandora 2013 10-K").]

Figure 1: Internet Music Industry Brand Awareness as % of Total Population 12+ (2014)



Source: Edison Research and Triton Digital, "The Infinite Dial 2014," p. 16.

2. Survival Rates Are High in Statutory Webcasting

25. It is not merely the rate of entry which indicates the health of the statutory webcasting industry; firms in the industry have historically been able to compete and to survive in the industry for many years, a fact which demonstrates that licensing costs in the industry have not deterred growth or been a significant factor in causing firms to firm in the industry. To further assess the economic performance of statutory webcasters, including specifically those operating under the statutory license, I obtained data from SoundExchange on the number and identities of licensees operating under the 17 U.S.C. § 112 and 17 U.S.C. § 114 statutory licenses from 2005 through 2013 – that is, webcasters who pay statutory rates.[13] These data provide

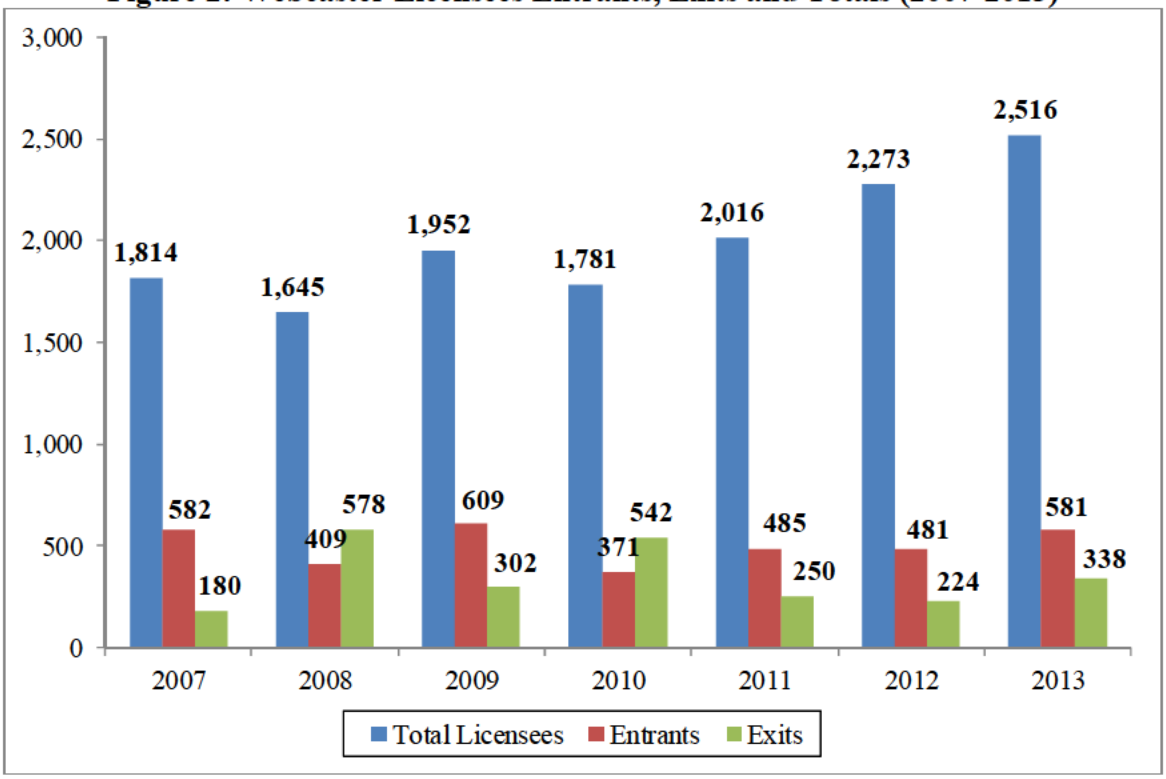
[13] Thus, this data does not include webcasters operating under direct licenses.

useful insight into the number of operating statutory licensees, the rate of entry of new statutory webcasters, and their survival rates over time.[14]

26. First, as mentioned above and as shown in **Figure 2**, the total number of number of statutory webcasting licensees has risen in five of the last seven years, with the only exceptions being 2008 and 2010. At the end of 2013, there were 2,516 webcasters operating under statutory licenses, up from 1,412 in 2006. Consistent with the discussion above, these data show that in every year since 2007, there have been at least 371 new statutory webcasters. While the total number of licensees remained relatively unchanged between 2007 and 2010, since that time, there has been steady growth in the number of licensees. The number of licensees has grown about 41 percent over that time, or about 12 percent per year.

[14] See SoundExchange Resiliency Data. The data include licenses for Business Establishment Services ("BES"), Cable/Satellite (New Subscription Services) ("CABSAT"), Pre-existing Subscription Services ("PES"), Satellite Digital Audio Services ("SDARS") and Webcasting. Within the webcasting license there are multiple license sub-types. What I categorize as Commercial Pure-Play Webcasters are: Commercial Webcaster (CRB) ("CW-CRB"), Commercial Webcaster (WSA) ("CW-WSA"), Micro Webcaster ("MICRO"), Pure-Play Webcaster ("PPWC"), Small Pure-Play Webcaster ("SMPPWC"), Small Webcaster ("SMW"), and Small Webcaster Settlement Act ("SWSA"). Other sub-license types included in the webcasting license data are: Broadcaster ("BRD"), Corporation of Public Broadcasting ("CPB"), Non-Commercial Micro Webcaster ("NC-MICRO"), Non-Commercial Education Webcaster ("NCEDW"), Non-Commercial Webcaster (CRB) ("NCW-CRB"), Non-Commercial Webcaster (WSA) ("NCW-WSA"), and Small Broadcaster ("SMBRD").

Figure 2: Webcaster Licensees Entrants, Exits and Totals (2007-2013)



Source: SoundExchange Data.

27. Similarly, in no year do even one third of statutory webcasters exit the industry; even in the years in which the total number of statutory webcasters fell from the previous year, the number of firms exiting the industry was never more than the 578 (out of 1,814, or about 32 percent) to exit the industry. **Table 3**, below, shows the survival rates, by year, for statutory webcasters operating in any given year. For example, the first line of the figure shows that of the 1,412 statutory webcasters who paid license fees in 2006, 557 – or 39 percent – were still in operation during 2013. Similarly, of the firms operating in 2010, about three quarters of them were still operating in 2013. If licensing rates were choking off growth, we would not likely see continued growth in the number of firms operating in the industry, or the historical success of firms to survive once they have entered.

Table 3: Webcaster Licensees Rate of Survival Until 2013 (2006-2013)

Year	2006	2007	2008	2009	2010	2011	2012	2013
2006	100%	87%	61%	53%	43%	42%	42%	39%
2007		100%	68%	60%	46%	45%	44%	41%
2008			100%	82%	61%	58%	56%	53%
2009				100%	72%	66%	64%	58%
2010					100%	86%	81%	75%
2011						100%	89%	79%
2012							100%	85%
2013								100%

Source: SoundExchange Data.

28. Indeed, as a point of reference, **Table 4** below shows establishment startup survival rates for all industries in the private sector using data from the Bureau of Labor Statistics ("BLS").[15] As can be seen in **Figure 3**, over the recent past, survival rates for statutory webcasters have generally been right in line with those of all business more generally.

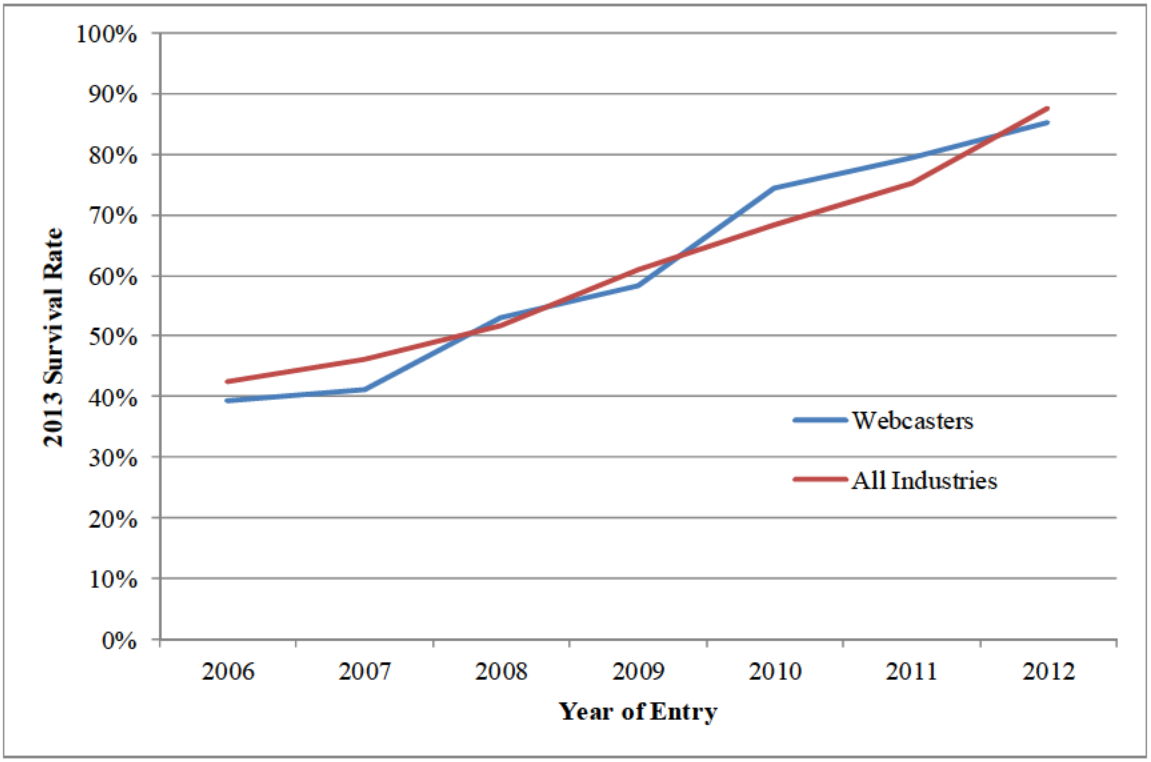
[15] Bureau of Labor Statistics Survival of Private Sector Establishments by Opening Year, available at http://www.bls.gov/bdm/us_age_naics_00_table7.txt , accessed September 27, 2014. The BLS defines an establishment as "[t]he physical location of a certain economic activity—for example, a factory, mine, store, or office. A single establishment generally produces a single good or provides a single service. An enterprise (a private firm, government, or nonprofit organization) can consist of a single establishment or multiple establishments." [Bureau of Labor Statistics Glossary, available at http://www.bls.gov/bls/glossary htm#E , accessed September 26, 2014.]

Table 4: Establishment Start-Up Survival Rates (2006-2013)

Year	2006	2007	2008	2009	2010	2011	2012	2013
2006	100%	78%	66%	56%	49%	45%	42%	43%
2007		100%	77%	63%	55%	50%	45%	46%
2008			100%	74%	62%	56%	51%	52%
2009				100%	76%	66%	59%	61%
2010					100%	79%	68%	68%
2011						100%	78%	75%
2012							100%	88%
2013								100%

Source: Bureau of Labor Statistics Survival of Private Sector Establishments by Opening Year, available at http://www.bls.gov/bdm/us_age_naics_00_table7.txt, accessed September 26, 2014.

Figure 3: Start-Up 2013 Survival Rates: All Industry Establishments vs. Webcasters (2006-2012)



Source: SoundExchange Data; Bureau of Labor Statistics Survival of Private Sector Establishments by Opening Year, available at http://www.bls.gov/bdm/us_age_naics_00_table7.txt, accessed September 26, 2014.

C. Entry Has Not Been Inhibited by the Minimum Fee

29. The statutory royalty rates have always provided for a minimum fee that operates as a credit against any additional royalty fees payable in the same calendar year for some webcasters and provides a monthly amount of aggregate tuning hours for the other set. I

understand that the statutory minimum fee set by the Judges has been approximately $500 per station or channel for each calendar year,[16] and that SoundExchange is proposing the same minimum fee in these proceedings. Based on my review of SoundExchange data, this minimum fee is not an undue burden on webcasters. To the contrary, as discussed above, the webcasting industry has thrived in recent years, with substantial entry. In fact, these data show that, of all non-commercial webcasters subject to a minimum fee set by the Copyright Royalty Judges, about 97 percent paid only the minimum fee between 2011 and 2013, or about two-thirds of all webcasters (both commercial and non-commercial).

30. While the minimum fee was essentially always binding for non-commercial webcasters, this did not prevent non-commercial webcasters from growing. In 2010, there were 707 non-commercial webcasters, which grew to 827 in 2011, 933 in 2012, and 998 in 2013 – an average compound growth rate of about 12 percent per year.[17] These figures demonstrate that the minimum fee has not historically prevented firms (both commercial and non-commercial) from taking statutory licenses and entering the market. This experience confirms that if the Judges maintain the minimum fee, new webcasters should continue to have the ability and incentive to enter the market.

D. The Number of Music Consumers Using Streaming Services has been Consistently Growing

1. Industry Data Demonstrates Audience Growth

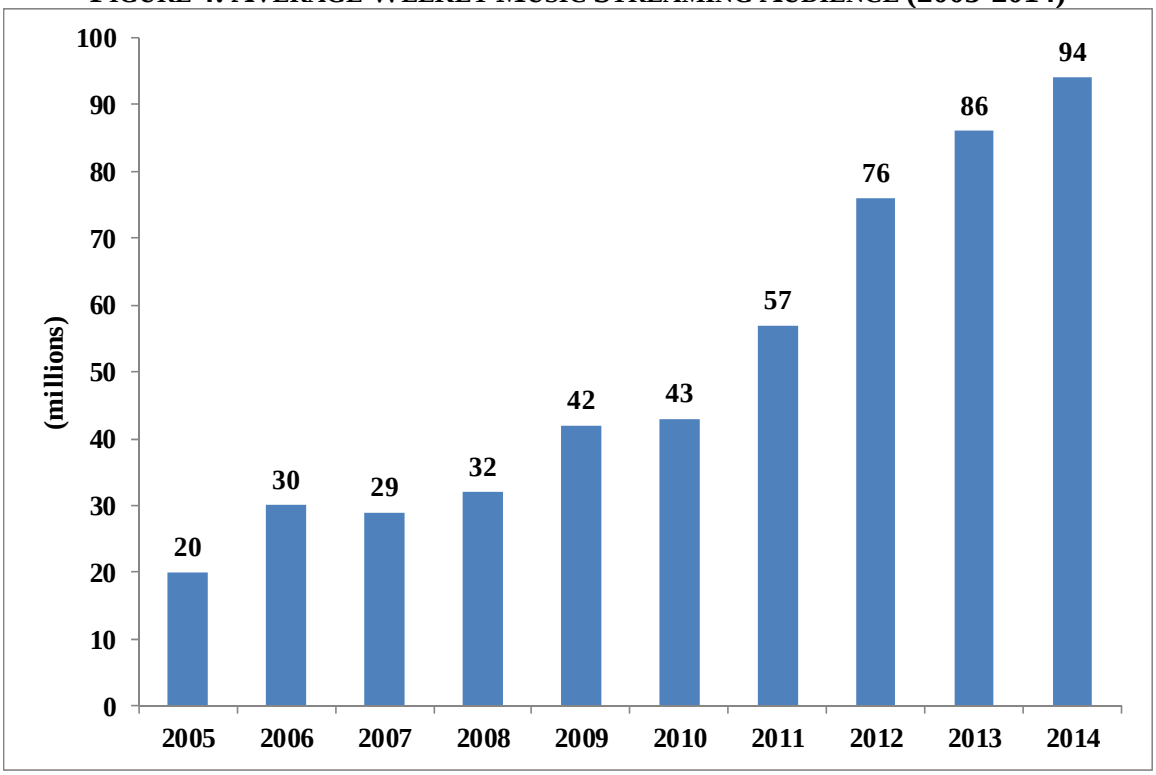
31. The music streaming industry has seen consistent growth in recent years, as music consumers have begun to spend more time online; during this time, the number of music streaming options (including free ad-supported options and mobile) has greatly expanded. The growth in mobile music streaming has caused the industry to branch out into other media as well, such as to the in-vehicle or connected car market, which may help to maintain growth in the

[16] SoundExchange Commercial Webcaster Rates, available at http://www.soundexchange.com/service-provider/rates/commercial-webcaster/, accessed September 26, 2014; SoundExchange Non-Commercial Webcaster Rates, available at http://www.soundexchange.com/service-provider/rates/noncommercial-webcasters-rates/ , accessed September 26, 2014.

[17] SoundExchange Data.

future.[18] These general trends can be plainly seen in industry data on the audience for music streaming platforms. As seen below in **Figure 4**, the music streaming average weekly audience has grown steadily from 20 million in 2005 to 94 million in 2014, with a compound annual growth rate of 19 percent.

FIGURE 4: AVERAGE WEEKLY MUSIC STREAMING AUDIENCE (2005-2014)



Source: SNL Kagan, "Economics of Internet Music & Radio 2014," p. 18.

32. Unsurprisingly, the growth in audience has corresponded to similar growth in streaming listening hours. As shown in **Figure 5**, the total number of music streaming hours per year has increased from 2.6 billion hours in 2005 to 20 billion hours in 2013. The growth in music streaming can be seen in metrics from other sources as well. As shown in **Figure 6**, Edison Research and Triton Digital found average weekly listening hours for music streaming to be steadily rising, from just over 6 hours in 2008 to more than 13 hours in 2014.[19] While some

[18] See ¶¶ 38-41.

[19] Edison Research and Triton Digital, "The Infinite Dial 2014," ("Edison Research and Triton Digital 2014 Report"), p. 9. Edison Research and Triton Digital define online radio as "[l]istening to AM/FM radio stations online and/or listening to streamed audio content available only on the Internet".

research indicates that total music consumption has grown in recent years – for example, data from Veronis Suhler Stevenson show that per capita music consumption has grown from 165 hours per year to about 200 hours per year from 2009 to 2012,[20] and Nielsen reports that "we are seeing a surge in music consumption"[21] – these figures suggest that music consumers have turned to newer media for this growth. One benefit of a per-play rate structure is that it ensures that if listening continues to increase, record companies will be compensated for the growth in the usage of their sound recordings, even if firms seek to maximize share instead of maximizing profits. Similarly, should listening decline, record companies would "share the pain" as well; that is, a per-play rate helps to share the risk among music streaming services and record companies. Moreover, as an economic matter, ensuring that copyright holders are able to share in the revenues earned through the dissemination of their works helps to maintain the incentives for a wide variety of creative works to be brought to market.

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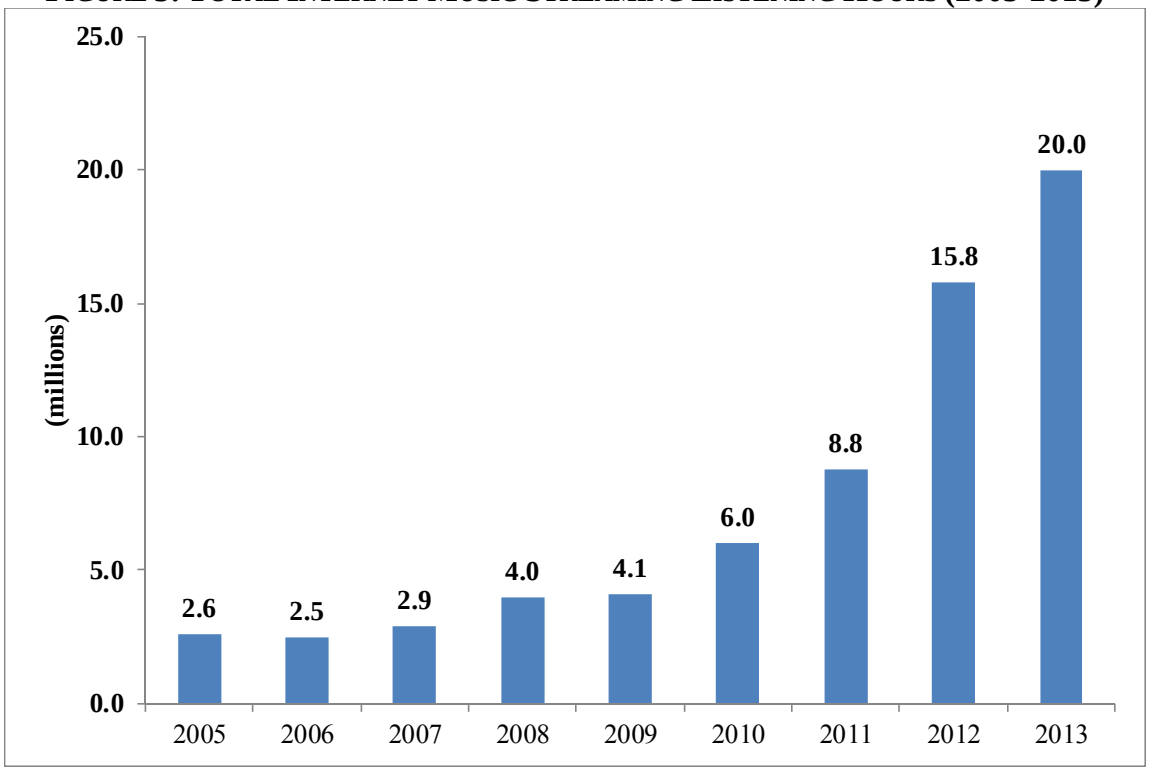
[20] http://www.statista.com/statistics/186920/time-spent-listening-to-recorded-music-in-the-us-since-2002/ , accessed September 26, 2014.

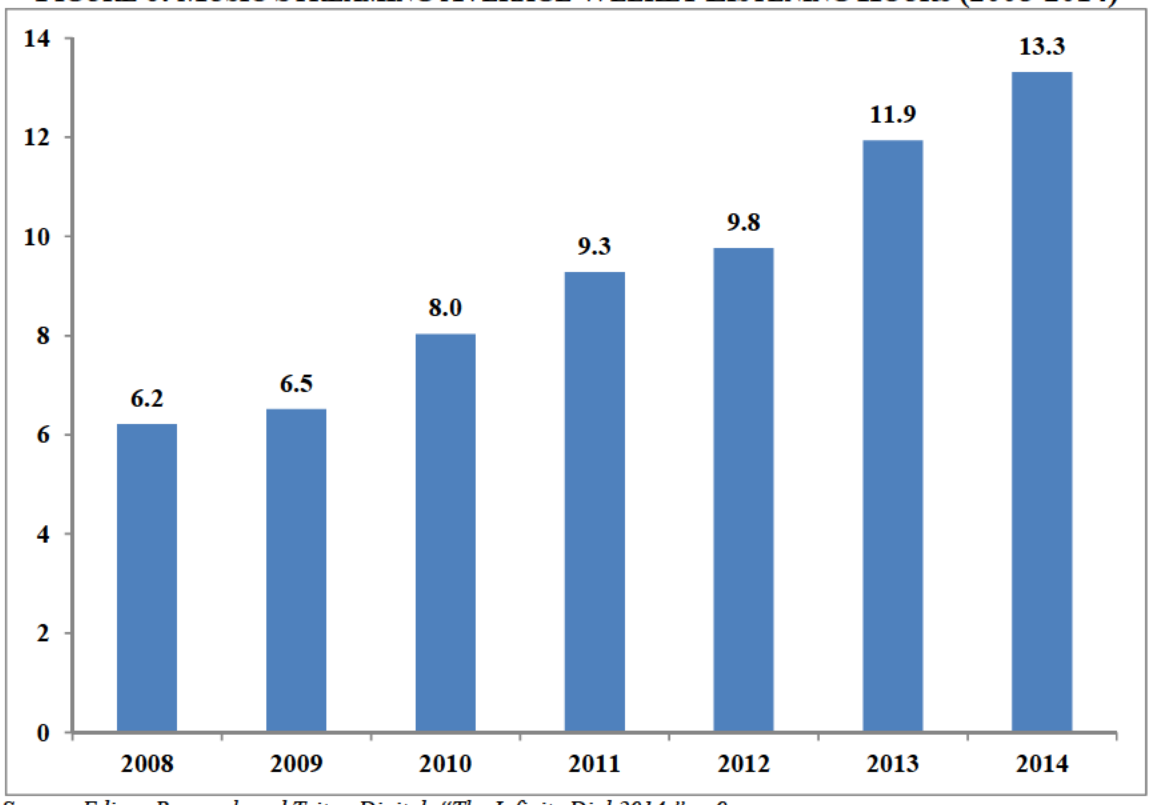
[21] Nielsen, "U.S. Music Industry Year-End Review 2013," p. 1.

FIGURE 5: TOTAL INTERNET MUSIC STREAMING LISTENING HOURS (2005-2013)



Source: SNL Kagan, "Economics of Internet Music & Radio 2014," p. 18.

FIGURE 6: MUSIC STREAMING AVERAGE WEEKLY LISTENING HOURS (2008-2014)

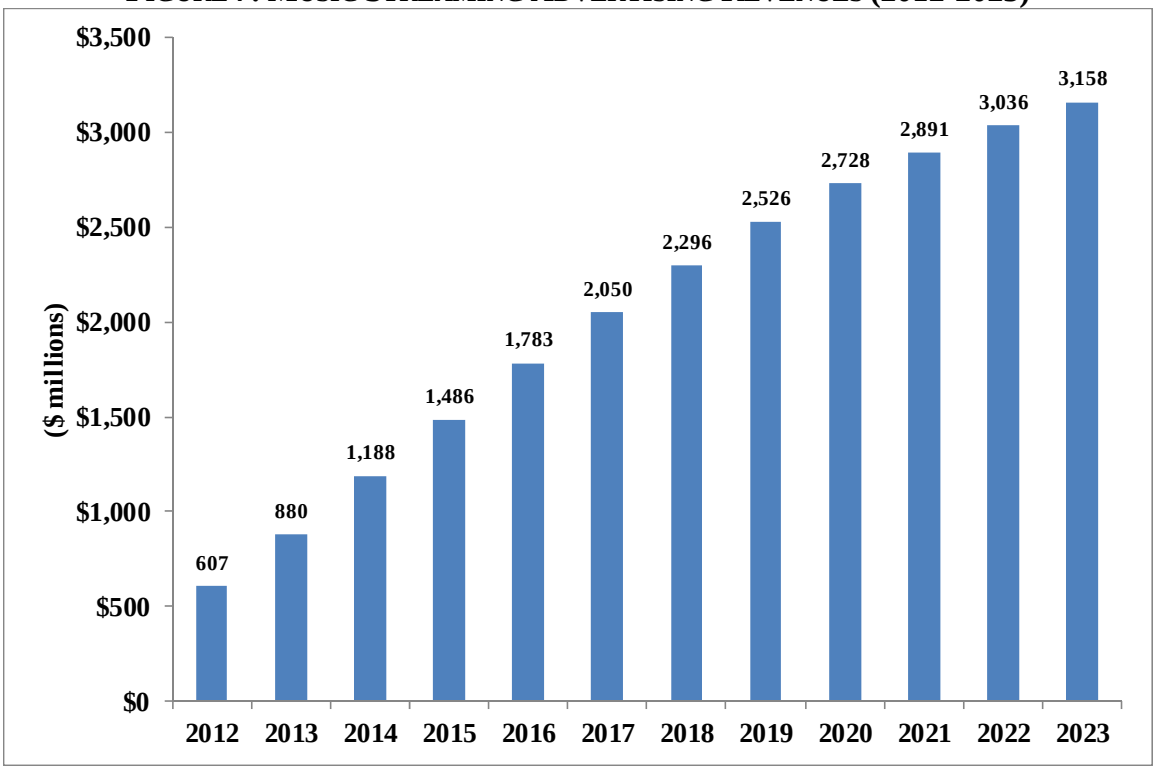


Source: Edison Research and Triton Digital, "The Infinite Dial 2014," p. 9.

33. Not surprisingly, the growth in music streaming's audience and overall listening hours has led to a corresponding increase in revenue, including advertising revenue. For example, the ad-supported music streaming model has continued to grow in recent years and, as a result, advertising revenues have risen and are expected to continue to rise. **Figure 7** shows recent music streaming advertising revenue, as well as forecasts for the future. Advertising revenue is projected to grow from $607 million in 2012 to $3.2 billion in 2023, demonstrating a strong belief in sustained audience growth and increased listening hours in the future. This degree of projected future growth is consistent with Pandora's advertising revenue history, which has shown growth from about $50 million in fiscal year 2010 to about $375 million in fiscal year

2013.[22] As I discuss in more detail below, this revenue would likely be even higher, but for the strategy of deferring short-run profits in favor of growing the service's user base.

FIGURE 7: MUSIC STREAMING ADVERTISING REVENUES (2012-2023)



Source: SNL Kagan, "Economics of Internet Music & Radio 2014," p. 2 (2012-2013 data is actual; 2014-2023 is projected).

34. The growth in streaming has, in part, been driven by the rapid expansion of Internet connected mobile devices and the parallel expansion of broadband penetration (as discussed in Section II.D.3), which have led to more music being consumed using mobile rather than stationary devices. Two of the most popular streaming services (Pandora and Spotify) have subscriber bases in which more than three-quarters of global subscribers use mobile applications to access the service (approximately 77 percent and 87 percent, respectively).[23] Pandora has reported that "[l]istener hours on mobile and other connected devices constituted approximately

[22] Pandora Media, Inc. Form 10-K for the fiscal year ended January 31, 2012, p. 47; Pandora 2013 10-K, p. 54.

[23] See SNL Kagan, "The Economics of Mobile Music 2014," p. 2 ("SNL Kagan Mobile Music 2014 Report").

5%, 26%, 54%, 69% and 77% of our total listener hours for fiscal years 2009, 2010, 2011, 2012 and 2013, respectively" and that it expects that shift to continue in the future.[24]

35. The International Federation of the Phonographic Industry (IFPI) has recognized this trend, noting that there has been a "global shift of music consumption to smartphone-based mobile platforms. Digital music has moved rapidly from a fixed line desktop PC experience to on-the-go consumption on wireless smartphones and tablet devices. Record companies are now monetizing the consumption of music in ways that were not possible a few years ago."[25] This is consistent with the expansion of broadband access in the United States and worldwide (discussed in Section II.D.3) as well as the growth in smartphone usage in the United States. In 2012 smartphone penetration was at 12.9 percent worldwide and is forecasted to be 36.2 percent at the end of 2016.[26] The appeal of mobile offerings is not limited to statutory webcasters. As IFPI notes, Spotify, which previously required its users to have a subscription to allow mobile access, launched a free mobile tier which aims to ultimately increase paid subscriptions.[27]

36. The major mobile carriers in the United States have also begun to bundle streaming music services with mobile service plans: "[s]everal Tier 1 U.S. wireless carriers in 2014 have launched digital music services bundled into wireless bills, a practice that is old news internationally but a relatively new development stateside. Leap, AT&T Mobility and T-Mobile US have further sweetened the offer by including 'zero-rate' streaming: music streaming that does not count towards users' monthly data caps."[28] The introduction of music streaming bundles allows for greater penetration in the market using what is becoming the preferred

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[24] Pandora 2013 10-K, pp. 15-6.

[25] IFPI, "Digital Music Report 2014" ("IFPI Digital Music 2014 Report"), p. 16.

[26] IFPI Digital Music 2014 Report, p. 16.

[27] IFPI Digital Music 2014 Report, p. 18.

[28] See SNL Kagan Mobile Music 2014 Report, p. 7.

technology of consumers. Music labels and executives believe that bundled music subscriptions will help to increase revenue and revenue growth.[29]

37. The growth of mobile music is expected to continue as a result of penetration into automobiles, *i.e.*, the "connected car:"

> The connected-car space has become a highly competitive race to integrate into the dashboard of almost every major auto manufacturer around the world. The in-vehicle telematics platform is a relatively un-tapped resource in regards to advertising revenue, making it a very attractive investment for digital music services. Technology has changed the delivery for in-car entertainment once dominated by AM/FM radio. The connected car will be able to give drivers a number of entertainment choices as well as real time information and diagnostic services.[30]

While many recent-model cars provide auxiliary inputs (or USB connections) which allow consumers to play streaming music via their phone (through the phone's mobile Pandora app, for example), the number of dedicated in-vehicle infotainment systems (which incorporate online access to music services directly into the entertainment system) is predicted to grow from 900,000 at the end of 2013, to over 51 million by the end of 2017.[31] A recent report indicates that "[f]ive million users have now activated memberships in cars that have Pandora built in" and that Pandora indicates that "[t]his year, 135 car models from 26 auto makers will be coming off the lot with Pandora built in … That's a third of all new 2014 cars."[32] Pandora expects ultimately to take substantial share of in-car listening hours:

> VentureBeat: Will Pandora ever completely unseat terrestrial radio in the car? Will it ever offer a full slate of music, live and local news, weather, traffic, etc.?

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[29] Hannah Karp, "Scores of Music Services Stream into Crowded Field, Many of the New Models Will Focus on Genre," Wall Street Journal, December 23, 2013, available at http://online.wsj.com/news/articles/SB10001424052702304244904579276060937998656 , accessed September 26, 2014.

[30] See SNL Kagan, "The Economics of Internet Music and Radio 2014" ("SNL Kagan Internet Music 2014 Report"), p. 33.

[31] See SNL Kagan Internet Music 2014 Report, p. 35.

[32] Mark Sullivan, "5 Million New Pandora Users Have Signed Up in the Car," VentureBeat, July 10, 2014, available at http://venturebeat.com/2014/07/10/5-million-new-pandora-users-have-signed-up-in-the-car-in-2014/ , accessed September 26, 2014.

> Westergren: I think we'll get there, but I don't think we're quite there yet. With consumers today the expectation that you have a lot more control. I think there will always be a place for terrestrial radio. But we think we can get a good share of the time people spend listening in the car. Half of all listening now takes place in the car.[33]

38. The auto industry has embraced the integration of music streaming services in vehicles. Scott Keogh, president of Audi America states, "'[w]hen you get the younger buyer, connectivity is huge. When they see our research, it's the No. 1 reason they purchase a car.'"[34] Industry analysts also agree that soon this integration will be necessary for automobile manufacturers to compete: "'[p]eople want Pandora in the car, and they don't want to have to think whether it's on the phone or in the dashboard.'"[35]

39. Notably, Apple has begun to deploy infotainment systems into vehicles. Its Apple Carplay service allows full integration of a user's iPhone with select car dashboards. Users have access to all the key functions of the iPhone including music streaming. Apple Carplay supports an ever-expanding number of music streaming services, including iHeartRadio and Spotify.[36] Apple is not the only music service provider to launch a vehicle integrated service. **Table 5** shows the other major music streaming services that have signed deals with car manufacturer and car-equipment manufacturers. Unsurprisingly, Pandora leads the industry with the most agreements and deployment.

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[33] Mark Sullivan, "My breakfast with Westergren: Pandora's founder talks about royalties, ads, brands, and bands," VentureBeat, September 23, 2014 (available at http://venturebeat.com/2014/09/23/my-breakfast-with-westergren-pandoras-founder-talks-about-royalties-ads-brands-and-bands/ , accessed September 26, 2014).

[34] Alex Pham, "Streaming in the Car Is Huge Business – So Which Service Will Win?," Billboardbiz, April 22, 2014, available at http://www.billboard.com/biz/articles/news/digital-and-mobile/6062808/streaming-in-the-car-is-huge-business-so-which-service , accessed September 24, 2014.

[35] Alex Pham, "Streaming in the Car Is Huge Business – So Which Service Will Win?," Billboardbiz, April 22, 2014, available at http://www.billboard.com/biz/articles/news/digital-and-mobile/6062808/streaming-in-the-car-is-huge-business-so-which-service , accessed September 24, 2014.

[36] https://www.apple.com/ios/carplay/ , accessed September 24, 2014.

Table 5: Summary of In-Car Music Streaming Agreements

Service	Summary
Pandora	Agreements with 23 car-equipment makers, including Ford, GM, Toyota, BMW, Mercedes-Benz and Nissan.
Apple Carplay	Agreements with 16 carmakers including Ferrari, Mercedes-Benz and Volvo.
Rdio	Agreements with 15 car-equipment makers for cars by Ford, GM, Chrysler and Honda.
TuneIn	Agreements with 13 carmakers including Ford, GM, Mini, BMW, Tesla, Mercedes-Benz and Volvo.
Slacker	Agreements with seven carmakers including Chrysler, Subaru, Scion and Tesla.
Spotify	Agreements with Ford and Volvo.

Source: Alex Pham, "Streaming in the Car Is Huge Business – So Which Service Will Win?," Billboardbiz. April 22, 2014, available at http://www.billboard.com/biz/articles/news/digital-and-mobile/6062808/streaming-in-the-car-is-huge-business-so-which-service ,, accessed September 26, 2014.

40. Indeed, Pandora has focused on integrating its service into all mobile and inter-connected devices in order to provide "Audio Everywhere" for the consumer. Pandora service for the home is available on audio video receivers, Blu-ray players, home theater equipment, television service providers, streaming players, home audio equipment, table-top radios, television sets, and many other appliances.[37] In order to capitalize on the ubiquitous use of its music streaming service in basically all locations, Pandora is establishing an advertising service that allows for advertisement wherever Pandora is played (i.e. internet, mobile, etc.).[38] Pandora has specifically focused on in-car advertising as a means of generating greater advertising revenue recognizing that "[i]n order to deliver music everywhere our listeners want to hear it, our service must be compatible with mobile, consumer electronic, automobile and website

[37] http://www.pandora.com/#/everywhere/home , accessed September 24, 2014.

[38] http://advertising.pandora.com/product/audio-everywhere/ , accessed September 24, 2014 .

technologies."[39] But Pandora's goals are not limited to the car; as a 2014 Investor Presentation puts it, Pandora's goal is "Pandora Everywhere."[40]

41. Record labels have also placed their stock in streaming as the future of music distribution. An article from Billboardbiz notes, "[m]ajor music companies like UMG, Sony Music and Warner Group – who have all taken minority equity stakes in Spotify and other streaming services – are betting that subscription services will start to grow quickly to help offset an expected drop-off in download sales."[41] Stephen Cooper, the CEO of Warner Music Group, expressed confidence in this growth after seeing a 102-percent growth in streaming revenue in the quarter ended June 30, 2014 (which helped offset an eight-percent decline in digital download revenue), stating, "[w]e remain optimistic that these exciting developments, along with increasingly connected consumers, will drive even greater global consumption and monetization of music."[42] It is not surprising, then, that analysts predict that the future of music streaming will be focused on providing effective mobile offerings.[43]

2. There Has Been a Recent Decline in Recorded Music Sales, Even Digital Sales

42. The digital age brought about a paradigm shift in the way listeners consumed music. Physical sales have sharply declined since the beginning of the 21st century, and have been replaced by digital sales (specifically digital downloads). As shown in **Figure 8**, physical

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39 Pandora 2013 10-K, p. 20. Pandora began rolling out in-car advertising in January 2014. [See Mike Shields, "Pandora Rolls Out In-Car Ads: Web Radio Giant Claims Nearly 9% of Total Listening," Adweek, January 6, 2014, available at http://www.adweek.com/news/technology/pandora-rolls-out-car-ads-154743 , accessed September 27, 2014.]

40 Pandora Media, Inc. Investor Presentation, Q3 2014, p. 18.

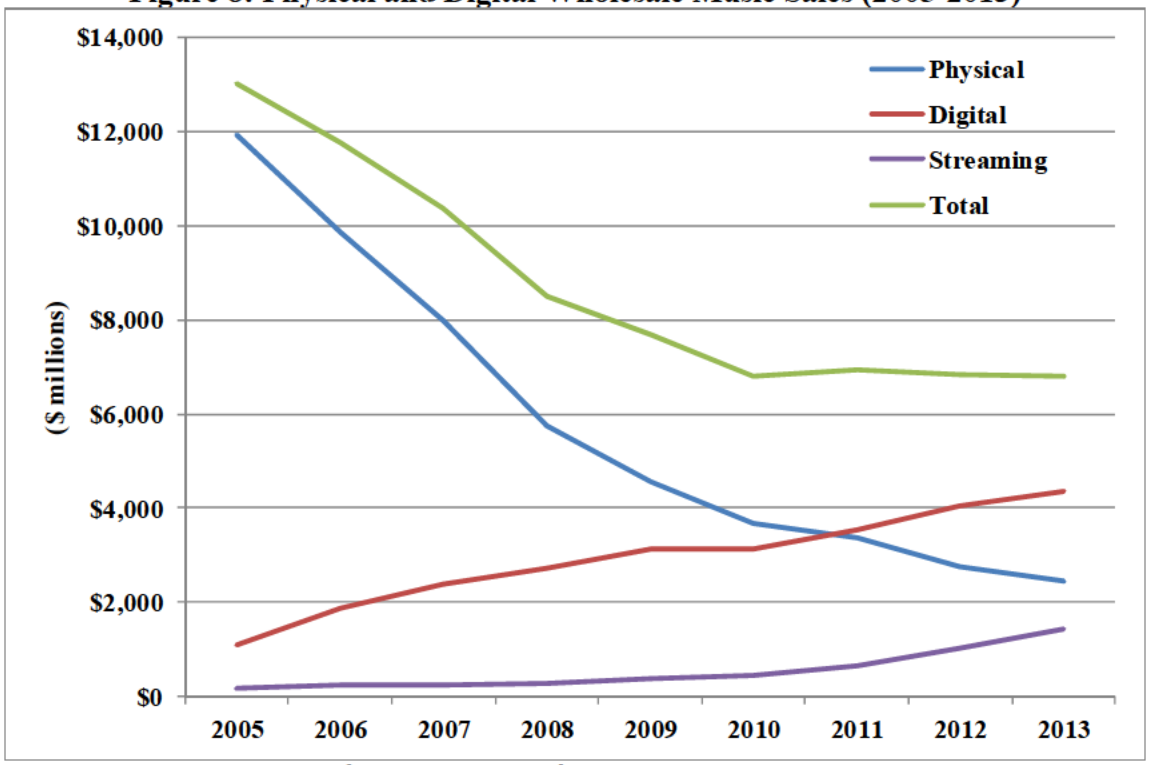
41 Yinka Adegoke, "Spotify Drove Universal Music's 75% Jump in Streaming Revenue Last Year," Billboardbiz, February 25, 2014, available at http://www.billboard.com/biz/articles/news/5915732/spotify-drove-universal-musics-75-jump-in-streaming-revenue-last-year , accessed September 24, 2014.

42 Glenn Peoples, "Warner Music Group Sees Revenue Growth After Parlophone Buy, Streaming Strengthens," Billboardbiz, August 7, 2014, available at http://www.billboard.com/biz/articles/news/record-labels/6214025/warner-music-group-sees-revenue-growth-after-parlophone-buy , accessed September 24, 2014.

43 See, for example, SNL Kagan Internet Music 2014 Report, p. 38.

sales revenue declined steadily from 2005 through 2012 while digital sales revenue increased, finally overtaking physical sales in 2011.

Figure 8: Physical and Digital Wholesale Music Sales (2005-2013)



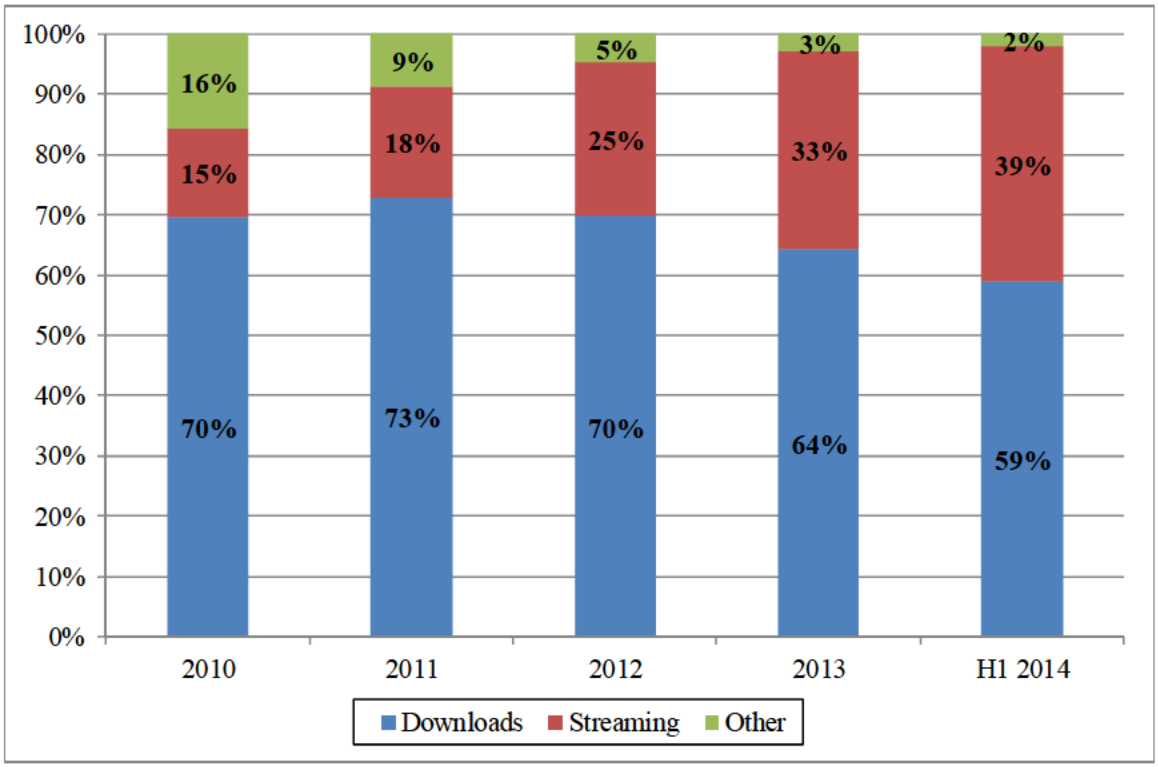
Source: SNL Kagan, "Economics of Internet Music & Radio 2014," p. 28; RIAA.

43. Beginning in 2013, however, digital sales began to decline as consumers in large numbers began a switch from digital downloads to streaming services. The Recording Industry Association of America ("RIAA") reports that digital sales of "Download Single[s]" and "Download Album[s]" fell from about $2.83 billion in 2012 to about $2.80 billion in 2013.[44] Indeed, while total digital revenue for the music industry grew from about $4.05 billion to about $4.36 billion, this growth comes from increased revenues earned via streaming services, with more than 25 percent growth in webcaster payments to SoundExchange and ad-supported

[44] Joshua P. Friedlander, "News and Notes on 2013 RIAA Music Industry Shipment and Revenue Statistics," RIAA, ("RIAA Music Industry Shipment and Revenue Statistics, 2013"), p. 3. According to mid-year 2014 figures, this trend has continued. Download revenues fell by about 12 percent compared to mid-year 2013, with album sales falling slightly more than digital singles. [Joshua P. Friedlander, "News and Notes on 2014 Mid-Year RIAA Music Industry Shipment and Revenue Statistics," RIAA, ("RIAA Mid Year Industry Shipment and Revenue Statistics, 2014"), p. 3.]

interactive services, as well as over 50 percent growth in digital subscription revenues.[45] Nielsen SoundScan reports similar substitution from digital downloads to streaming. Digital track unit sales are down 13 percent from first half sales in 2013, and on-demand audio streaming has increased by 50 percent in the same time period.[46] As shown in **Figure 9** below, there has been steady growth in the share of digital industry revenue that is from streaming services, while the share from downloads of digital singles and albums has been declining.

Figure 9: Share of Digital Music Sales by Category (2010-H1 2014)



Source: RIAA Music Industry Shipment and Revenue Statistics, 2010 through Mid-Year 2014.

44. **Figure 10** shows historical and forecast digital music distribution segregated by category and reveals this decline in digital downloads and the growing importance of music streaming. In a music industry forecast sales report, MIDiA Research globally forecasts, "[m]usic industry revenues will bottom out, not grow. Physical revenue will decline by 44% by 2019 while Streaming and Subscriptions transition will help push download revenues down by

[45] RIAA Music Industry Shipment and Revenue Statistics, 2013, pp. 1-2.

[46] Nielsen, "Nielsen Entertainment & Billboard's 2014 Mid-Year Music Industry Report," p. 1.

39% over the same period. Thus download revenue will fall nearly as quickly as CD revenue."[47] Streaming accounted for [redacted] percent of digital sales in the United States as of 2013. Streaming services are projected to dominate the digital space and account for [redacted] percent of digital revenue by 2019.[48] In a report on music streaming's effect on the industry, MIDiA found that "the first wave of subscribers was harvested directly from the most valuable download buyers, denting download sales in the process. 23% of music streamers used to buy more than one album a month but no longer do so."[49] To summarize, music is shifting into the new phase of consumption, which is expected to reflect the continued rise of music streaming services and decline of physical and digital download sales.

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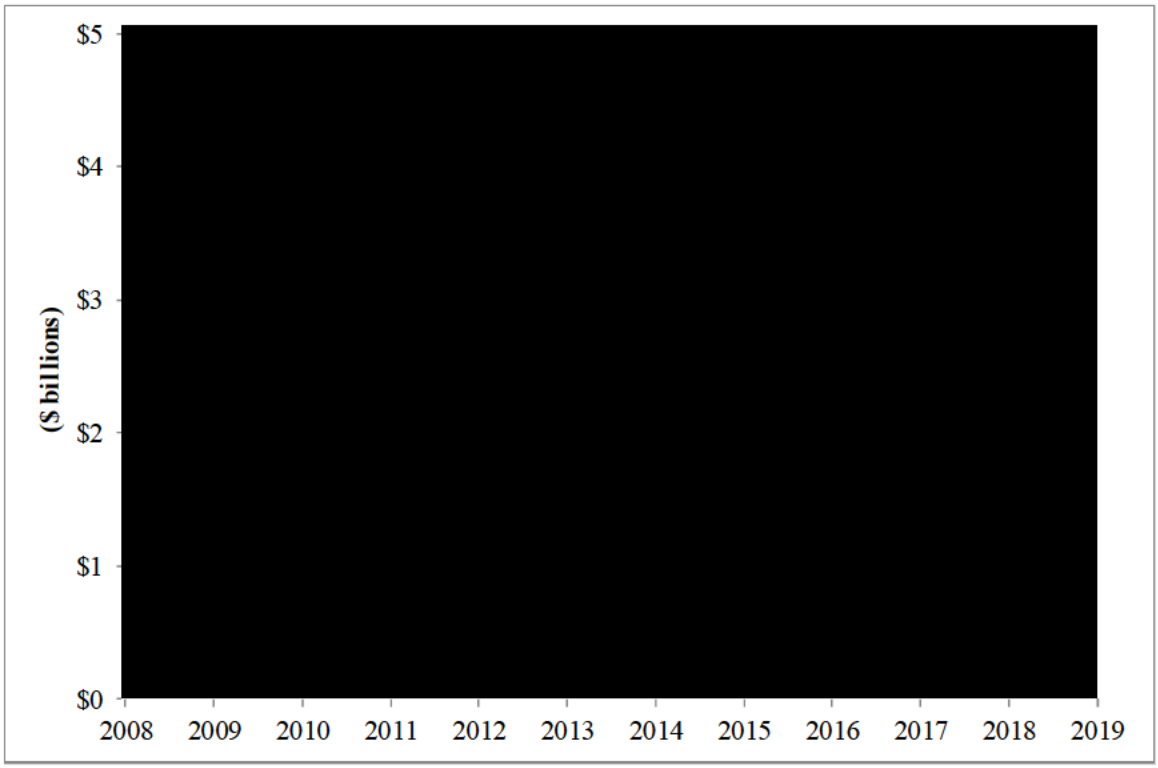
47 Mark Mulligan "MIDiA Research Global Music Forecasts," MIDiA Research, July 8, 2014, available at http://www midiaresearch.com/blog/view/midia-research-global-music-forecasts.html , accessed September 24, 2014.

48 MIDiA Research Music Model, July 2014.

49 Mark Mulligan, "How Streaming is Changing the Music Industry," MIDiA Research, August 29, 2014, available at http://www midiaresearch.com/blog/view/how-streaming-is-changing-the-music-industry-html# , accessed September 24, 2014.

Figure 10 (RESTRICTED): Digital Music Distribution (2008-2019)



Source: MIDiA Research Music Model, July 2014 (2008-2013 data is actual; 2014-2019 is projected).

45. As this shift in digital revenues from downloads to streaming (and in overall revenues away from physical sales) is expected to continue in the foreseeable future, the resulting competition among music streaming services will take on an increasingly important role. In particular, as I discuss in more detail below, this shift to statutory webcasting and interactive music streaming services will serve to make the revenue streams they provide increasingly important and, as a result, the competition between these types of services will become more and more important to content creators.

3. Broadband Access Continues to Grow and Broadband Speeds Continue to Rise

46. Growth in webcasting has largely become possible due to advances in broadband technology and increases in broadband penetration, especially mobile broadband. The speed of current broadband technologies has allowed for the proliferation of mobile music streaming.

Although home internet services have provided high download speeds for some time,[50] sufficient speeds for mobile usage are relatively recent. Verizon launched the first "3G" network in 2002.[51] According to Verizon, "it was 3G that made smartphones truly feasible" by providing data speeds far exceeding those of previous networks.[52] 3G speeds pale in comparison to 4G LTE technology. Verizon explains: "Using a 4G smartphone on Verizon's 4G LTE network means you can download files from the Internet up to 10 times faster than with 3G. With 4G LTE, using the web from your phone becomes as pleasurable as using it from your home computer."[53] The download speed necessary to stream audio is 1.5 Mbps.[54] Research performed by RootMetrics found that the average LTE download speed of the AT&T, Verizon, and Sprint was 14.4 Mbps in 2012 (T-Mobile had not yet rolled out its LTE network). The average of all four major carriers' non-LTE download speeds was 3.5 Mbps.[55] The fast speeds for even legacy networks allow consumers to enjoy music streaming at a high quality in any location. As discussed above, combined with the shift to new interfaces provided by music streaming services (such as the shift to integration into cars) has led to an increasing closeness of the user experience for statutory webcasters and non-statutory interactive services.

47. As broadband technology has advanced, penetration has also increased. A recent report from Pew Research gives an estimate of broadband penetration in the United States. **Figure 11** shows home broadband penetration has reach 70 percent of American adults as of

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50 A Federal Communications Commission ("FCC") report notes that the median download speed in the United States among broadband internet users was about 1.5 Mbps in 2000. [Federal Communications Commission, "BroadBand Performance, OBI Technical Paper, No. 4," Appendix 2 (p. 21).]

51 "Verizon Launches First U.S. '3G' Network," CNN, January 28, 2002, available at http://edition.cnn.com/2002/TECH/ptech/01/28/verizon.3g/ , accessed September 24, 2014.

52 http://www.verizonwireless.com/insiders-guide/tech-smarts/what-is-3g-what-is-4g-lte-difference/ , accessed September 24, 2014.

53 http://www.verizonwireless.com/insiders-guide/tech-smarts/what-is-3g-what-is-4g-lte-difference/ , accessed September 24, 2014. .

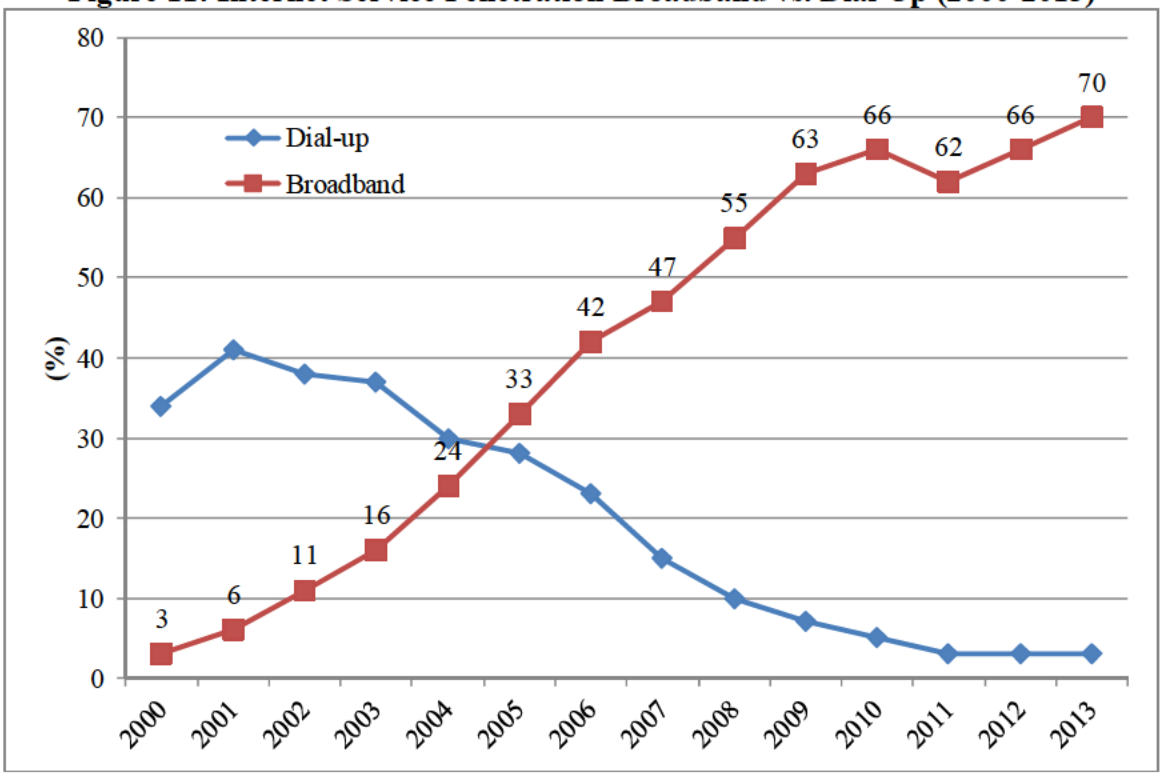
54 See Mark Harris, "Streaming Music FAQ: Is My Broadband Fast Enough to Stream Audio?," AboutTechnology, available at http://mp3.about.com/od/digitalmusicfaq/f/Streaming-Music-Faq-Is-My-Broadband-Fast-Enough-To-Stream-Audio htm , accessed September 24, 2014.

55 See Patrick Linder, "Lightning-Fast Data Speeds and Expanding Coverage: A 4G LTE Performance Review," RootMetrics, March 11, 2013, available at http://www rootmetrics.com/us/blog/special-reports/lightning-fast-data-speeds-and-expanding-coverage , accessed September 26, 2014.

May 2013, growing from 3 percent in 2000, and has almost completely displaced dial-up services.[56]

48. **Figure 12** shows mobile broadband penetration data from OECD, which has seen even greater growth with penetration at over 100 percent as of the end of 2013. Broadband technologies are increasing in speed every year and have a high rate of adoption further increasing the market for music streaming.

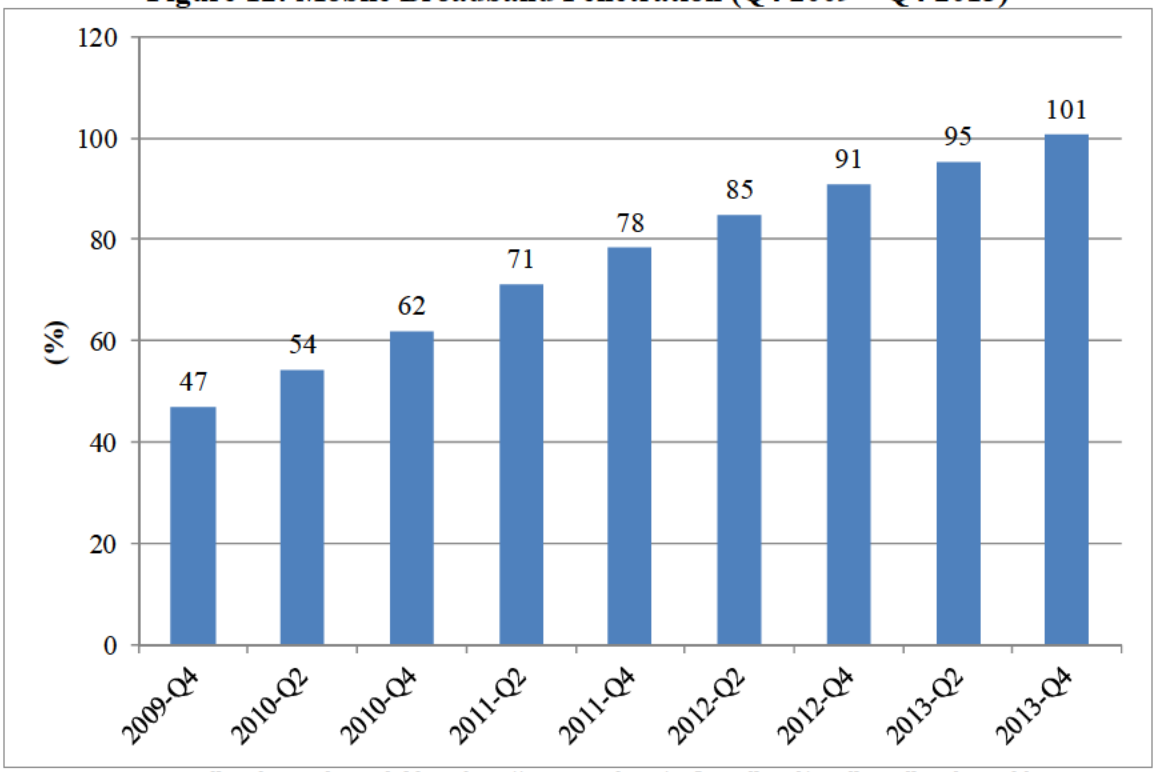
Figure 11: Internet Service Penetration Broadband vs. Dial-Up (2000-2013)



Source: Kathryn Zickuhr and Aaron Smith, "Home Broadband 2013," Pew Research, August 26, 2013, available at http://www.pewinternet.org/2013/08/26/home-broadband-2013/, accessed September 26, 2014.

[56] Pew Research defines broadband as any internet service except for dial-up. [Kathryn Zickuhr and Aaron Smith, "Home Broadband 2013," Pew Research, August 26, 2013, available at http://www.pewinternet.org/2013/08/26/home-broadband-2013/, accessed September 26, 2014.

Figure 12: Mobile Broadband Penetration (Q4 2009 – Q4 2013)



Source: OECD Broadband Portal, available at http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm, accessed September 26, 2014.

E. An Overview of Webcasting Licensing Rates

49. Statutory licensing arrangements currently depend on the particular characteristics of the webcasters. According to SoundExchange, there are the following groups of licensees:

> public performances by four classes of digital music services: eligible nonsubscription services (i.e., noninteractive webcasters and simulcasters that charge no fees), preexisting subscription services (i.e., residential subscription services which began providing music over digital cable or satellite television before July 1998), new subscription services (i.e., noninteractive webcasters and simulcasters that charge a fee, as well as residential subscription services providing music over digital cable or satellite television since July 1998), and preexisting satellite digital audio radio services (i.e., SiriusXM Radio).[57]

[57] See SoundExchange Licensing 101, available at http://www.soundexchange.com/service-provider/licensing-101/ , accessed September 26, 2014.

Interactive services are ineligible for the statutory license and hence do not have to meet that license's functionality requirements. However, because some (generally) interactive services may provide some non-interactive or semi-interactive streams to their customers, the distinction between non-interactive and interactive services has become less clear at the firm-level. Some services license certain offerings as non-interactive, as Spotify has done, even though their primary offering is interactive on-demand.[58]

50. With respect to these interactive services, SoundExchange notes, "[f]or services which provide an interactive service or on-demand access to certain tracks or artists (*e.g.*, YouTube), the statutory license does not apply, and a direct license must be obtained from the copyright holder."[59] The royalty rates that directly-licensed interactive services negotiate are generally higher than those for non-interactive services. For example, Spotify states that it pays approximately 70 percent of gross revenue in copyright royalty fees.[60] As a result, there is significant stratification in the costs paid for licenses to digital music rights by music streaming services which are competing for listening hours – some commercial webcasters have paid around one-tenth of one cent per stream, others have paid close to double that, and directly-licensed interactive services pay several times more than statutory webcasters do.

F. Pandora's Special Role in Statutory Webcasting

51. Pandora has been a market leader in the music streaming industry over the last decade. Pandora offers a customized webcasting service that utilizes its data and proprietary algorithm to specialize radio channels to suit the tastes of the listener.[61] Data discussed

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[58] Spotify has licensed its mobile radio offering under the statutory license in order to pay lower royalty fees. [Glenn Peoples, "Spotify Now Paying SoundExchange for Mobile Radio Streams in U.S., Lowers Royalty Bill," Billboardbiz, September 24, 2012, available at http://www.billboard.com/biz/articles/news/1083668/spotify-now-paying-soundexchange-for-mobile-radio-streams-in-us-lowers , accessed September 24, 2014.]

[59] See SoundExchange Licensing 101, available at http://www.soundexchange.com/service-provider/licensing-101/ , accessed September 26, 2014.

[60] http://www.spotifyartists.com/spotify-explained/#how-is-spotify-contributing-to-the-music-business , accessed December 6, 2013.

[61] Pandora Company Information, available at http://www.pandora.com/about , accessed September 24, 2014. Pandora's service relies heavily on its Music Genome Project. According to Pandora, the algorithm used in station creation analyzes "up to 450 distinct musical characteristics" in order to create the perfect channel

previously demonstrate the gulf in popularity between Pandora and all of its competition. As seen in **Figure 1** above, Pandora benefits from the highest awareness of all services. SoundExchange data indicates that Pandora accounted for about [redacted] percent of all webcasting payments in 2013.

52. Pandora has seen year to year growth in virtually all relevant financial metrics as shown in **Table 6**, and from 2012 to 2013, its revenue growth outpaced the growth of its content acquisition costs, reversing a trend from the prior year, and bringing Pandora's content acquisition costs as a percentage of revenues in 2013 back in line with its 2011 levels. During the same period total revenue grew at an average of about 55 percent per year. Pandora's advertising revenue has steadily increased and over the past three years, it represented on average about 86 percent of its total revenues.

for users. Pandora Music Genome Project Information, available at http://www.pandora.com/about/mgp , accessed September 24, 2014.

Table 6: Global Pandora Key Metrics Summary (2011-2013)

	2011	2012	2013	%Δ '11-'12	%Δ '12-'13
Revenue (000s)					
Advertising	233,202	360,715	521,239	55	45
Subscription services and other	33,565	49,294	116,654	47	137
Total revenue	266,767	410,009	637,893	54	56
Cost of Revenue (000s)					
Content acquisition costs	139,703	248,313	342,884	78	38
Other	22,316	30,845	45,121	38	46
Content acquisition as % of Total Revenue	52	61	54		
Key Metrics (unaudited):					
Registered Users (MM) (end of period)	125	175	200	40	14
Active Users (MM) (end of period)	47.6	67.1	76.2	41	14
Listener Hours (MM) (end of period)	7.75	13.51	16.7	74	24
Internet Radio Share (MM) (self reported)	70.9	77.3	71.8	6	-6
US Radio Share (MM) (self reported 28 day average)	4.94	7.58	8.6	3	1

Source: SNL Kagan, "Economics of Internet Music & Radio 2014," p. 32.

53. As I discuss further in Section III.G below, Pandora's content acquisition costs are low relative to other online content delivery services. As shown above, Pandora's total licensing costs have been around 50 to 60 percent of its revenue over the past several years, and are continuing to decline as a percentage of revenue.[62]

54. As I describe below in more detail, this cost structure plays directly to Pandora's favor. Already, by far, the largest statutory webcaster, Pandora is further bolstered by paying rates that are below the rates paid by other competing webcasters. As I describe below, Pandora has, in the presence of these low rates, demonstrated healthy financial performance in line with its expressed strategy (that I describe in the next section) of foregoing short-run profits in favor of longer-run growth. In a market in which growing a user base in the short run in a profitable strategy, it follows that certain cost structures can disproportionately accelerate such a strategy by, in this instance, allowing Pandora to keep revenues even lower (not through a low price, per se, but through low advertising exposure) thus allowing Pandora to attract more users via a more attractive (i.e., more music, fewer ads) music streaming package.

[62] Pandora Media, Inc. Form 10-Q for the quarterly period ended June 30, 2014, p. 26.

III. WEBCASTERS HAVE AN ECONOMIC INCENTIVE TO INVEST IN MARKET SHARE

55. While the evidence discussed above makes clear that music streaming in general and webcasting, in particular, has been consistently growing and attracting consistent entry over the past few years, indicating that the industry is healthy and represents an expected profit center for the future, some companies, such as Pandora, have not necessarily yet seen significant net profits. This pattern is not surprising, however – it is consistent with economic theory and experience, which makes clear that many companies defer profits in order to grow more rapidly. Indeed, rational profit-maximizing firms will focus not just on maximizing profits in the short run, but rather on maximizing profits over a time horizon which includes both the short and long run. As a result, they may choose to sacrifice current profits in order to obtain larger future profits. This effect may be more pronounced for internet firms which may be subject to network effects. In this section, I analyze the financial performance of a number of internet firms, their financial performance and statements made about their focus on growth over short-run profits. I then discuss, in more detail, the particular case of Pandora which highlights how price discrimination in licensing rates can distort economic outcomes.

A. Maximizing Long-Run Profitability Often Means Investing in Market Share in the Short Run

56. A firm's objective is to maximize its value, but this does not imply a focus solely on short-run profits. As described in a well-known corporate finance textbook, a firm's natural financial objective is to "[m]aximize the current market value of shareholders' investment in the firm."[63] A firm's current market value is a combination of both its short-run and long-run profits. Economically rational investors care about both and, accordingly, firms will rationally maximize a weighted combination of the two.[64]

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[63] Richard Brealey, Stewart Myers, and Franklin Allen, *Principles of Corporate Finance, 11th Edition*, McGraw-Hill Irwin (2014) ("Brealey, Myers, and Allen"), p. 7. While this is an explicit fiduciary duty for publicly held firms, even private firms generally have the goal of maximizing the investment made by its owners and private investors.

[64] The value of a company is the discounted value of its expected future cash flows. See Brealey, Myers, and Allen, p. 80 – 84.

57. That combination is based on the net present value of current and expected profits. Net present value implies that future profits are discounted according to the company's cost of capital or required return in the capital markets.[65] Any tradeoff between current profits and future profits is weighed with this required return, and a company should be willing to make expenditures that reduce current profits so long as that increases future profits by more than the cost of capital. The net present value calculation explicitly incorporates these facts about value, current profits, and future profits. Importantly, net present value accounts for all future profits, but those future profits are given less weight than profits earned closer to the present. Firms should, and do, attempt to maximize the net present value of all of their current and future profits.

58. Given this relationship, it is evident that firms will weigh current and future profits when they make decisions. A firm maximizing its value — the net present value of its profits — may well decide on courses of action that are initially not profitable if future profits are expected to be high enough. A firm's investment decisions will incorporate current and future profits, and it may be maximizing value even when it incurs short-run losses.

B. Network Externalities Can Enhance the Value of Investing in Market Share

59. This tradeoff between current and future profits may be even more pronounced in industries that are subject to network effects. Markets are subject to network effects if the value of a product (or service) to a consumer depends on the number of other consumers using the product; another way to express this concept is to say there are "increasing returns to scale in consumption."[66] The classic case of network effects are physical networks: a telephone is much more valuable to a consumer if other consumers also own telephones. Thus, one attracts customers by having many customers; growth leads to value. Gaining early adopters now leads

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[65] Brealey, Myers, and Allen, p. 80.

[66] Nicholas Economides, "Public Policy in Network Industries," in Paolo Buccirossi, ed., *Handbook of Antitrust Economics* (Cambridge MA: MIT Press, 2008), p. 472.

to gaining more adopters later. However, internet firms have shown a similar tendency towards the importance of network effects.[67]

60. Sometimes competition in markets with network effects leads to "tipping." This means that the final market outcome results in one network: the market has "tipped" in favor of one competitor. Even if a market is not subject to tipping, consumers may find themselves locked in to the network they have chosen. The cost of switching networks can be high; this might be true, for example, if consumers have invested time and research into a company's service. Prior to making a choice, a consumer is "free" to choose among competing options. However, for example, once the consumer has made a choice and invested time in, for example, customizing the music streaming channels offered by one service, she is no longer "free" to switch to a competitor; doing so would require "recreating" the customized information that are already in place at her initial choice and thus makes it costly to switch. These economic concepts directly affect choices companies make because they affect a company's current and future profitability.[68]

61. An important aspect of an industry with network effects present is the nature of competition, as gaining market share is of particular importance and, as a new market is growing, there can be a "race" to be first in the growth race:

> Strong network effects imply that the competition *for the market* takes precedence over competition *in the market*. The fact that the natural equilibrium market structure in network industries is winner take most with very significant market inequality does not imply that competition is weak. Competition on which firm will create the predominant (top) platform and reap most of the benefits is often

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[67] See, for example, Nicholas Economides, "The Internet and Network Economics," in *Internet and Digital* Economics, EricBrousseau and Nicholas Curien, eds., *Internet and Digital Economics*, Cambridge University Press (2007), pp. 239-267; Matt Buchanan, "Network Effects and Global Domination: The Facebook Strategy," Wired, May 17, 2012, available at http://www.wired.com/2012/05/network-effects-and-global-domination-the-facebook-strategy/ , accessed September 24, 2014.

[68] See, for example, Joseph Farrell and Paul Klemperer, "Coordination and Lock-in: Competition with Switching Costs and Network Effects," in *Handbook of Industrial Organization, Volume 3*, Mark Armstrong and Robert Porter, eds., North-Holland (2007), pp. 1967 – 2072 and Oz Shy, "A Short Survey of Network Economics," *Review of Industrial Organization*, Volume 38 (2011), pp. 119 – 149.

> intense. In network industries there is typically an intense race to be the dominant firm.[69]

62. Industries with network effects and switching costs, therefore, are more likely to sacrifice short-run profits for longer-run profits, in order to make investments or to cut prices so as to gain share and become the market leader. Note that market leadership conveys benefits not only in terms of increased numbers of customers, but those customers will have increased willingness to pay. Thus, because consumers for a product with network effects value the product more when there are more other consumers using the good, firms will be able to charge higher prices and thus potentially earn more profits when more consumers are using the good.

C. Internet Firms Often Defer Profits in Order to Capture Market Share

63. To investigate the extent to which internet firms employ this strategy, NERA conducted an empirical analysis using financial data from a selection of internet companies and, as described below, the results demonstrate that these companies have, in fact, favored early growth in size and share at the expense of short-run profits.

64. To perform this analysis, NERA first identified a set of publicly traded internet firms, restricting the search to publicly traded companies, because these companies are required to disclose information on their financial performance, and in order to conduct a meaningful financial analysis, access to the companies' financial information was required. To identify the set of firms, NERA first reviewed five internet indices: the Global X Social Media Index, the SPDR Morgan Stanley Technology Index, the NYSE Arca Tech 100 Index, the S&P North American Technology Sector Index, and the RDG Internet Composite.

65. From this initial list of companies, NERA applied three additional filters in order to focus on internet firms with relevant financial information. First, the analysis was restricted to companies with GICS codes "Internet or Catalogue Retail," "Internet Software & Services," "IT

[69] Nicholas Economides, "Public Policy in Network Industries," in *Handbook of Antitrust Economics*, Paolo Buccirossi, ed., MIT Press (2008), p. 486.

Services," or "Software."[70] Then, it was further restricted to companies that had an IPO between 2010 and 2013. Each firm was required to have some measurement of its size, such as the number of users, the number of streams, or some other relevant metric.[71] From this group of publicly traded internet firms, we examined user and financial information for 22 companies, listed in **Table 7** below.[72]

[70] According to MSCI, the GICS (Global Industry Classification Standard) is an industry taxonomy developed by MSCI and Standard & Poor's for use by financial professionals. Its structure consists of 10 sectors, 24 industry groups, 67 industries, and 156 sub-industries. [http://www msci.com/products/indexes/sector/gics/ , accessed September 24, 2014.]

[71] In this report, as I describe my analysis I will generically use the term "user" even though the actual metric for a given company may be number of streams, number of page views, or some other measurement.

[72] Netflix was not included in the analysis, despite meeting most of the criteria described above. As of the date of this report, Netflix's business model of streaming movies is similar to Pandora's. However, Netflix underwent a change in strategy from mailing of physical DVDs to the streaming model. Because of the limitations of publicly available financial data, it is not possible to adequately separate the two and thus Netflix was not included.

Table 7: List of Comparator Companies and Select Descriptive Information

	Company	IPO Date	GICS Industry
1	Angie's List, Inc.	11/17/2011	Internet Software & Services
2	Bazaarvoice, Inc.	2/24/2012	Internet Software & Services
3	Cornerstone Ondemand, Inc.	3/17/2011	Internet Software & Services
4	Demand Media, Inc.	1/26/2011	Internet Software & Services
5	E2open, Inc.	7/26/2012	Internet Software & Services
6	Facebook, Inc.	5/18/2012	Internet Software & Services
7	Groupon, Inc.	11/4/2011	Internet & Catalog Retail
8	Homeaway, Inc.	6/29/2011	Internet & Catalog Retail
9	LinkedIn Corporation	5/19/2011	Internet Software & Services
10	NQ Mobile, Inc.	5/5/2011	Software
11	Qihoo 360 Technology Co., Ltd.	3/30/2011	Internet Software & Services
12	RealPage, Inc.	8/12/2010	Software
13	Renren Inc.	5/4/2011	Internet Software & Services
14	RetailMeNot, Inc.	7/19/2013	Internet & Catalog Retail
15	Trulia, Inc.	9/20/2012	Internet Software & Services
16	Twitter, Inc.	11/7/2013	Internet Software & Services
17	Xoom Corporation	2/15/2013	Internet Software & Services
18	Yelp, Inc.	3/2/2012	Internet Software & Services
19	Youku Tudou, Inc.	12/8/2010	Internet Software & Services
20	Zillow, Inc.	7/20/2011	Internet Software & Services
21	Zulily, Inc.	11/15/2013	Internet & Catalog Retail
22	Zynga, Inc.	12/16/2011	Software

Source: FactSet Research System, Inc. Note: IPO date is the "First Trade Date."

66. The firms NERA examined vary in size and profitability. The smallest had revenues during the year of their IPO of $41 million; the largest, $5 billion. The median firm had revenue of $153 million. During the year of the IPO, the least profitable firm had a loss from operations of $636 million while the most profitable had income from operations of $538 million. The median firm's profits in the year of its IPO in fact lost $2.4 million. These correspond to operating margins ranging from -96 percent to 25 percent with a median of -2 percent. Consistent with range of revenues and the market's perception of the firms' future profitability, market capitalization varied substantially at the time of IPO. The smallest market

capitalization was $66 million while the largest was $24 billion. The median market capitalization is $922 million.[73]

1. Financial Analysis Shows Deferred Profits

67. NERA reviewed and analyzed the financial statements of these 22 companies and the results indicate that their financial performance and growth is consistent with firms deferring profitability to achieve more rapid growth of users as opposed to operating margin or income. Increases in the number of users are a measure of growth, and firms that are growing rapidly to achieve scale will see large increases in their user base. However, if firms focus on growth instead of short-run profitability, those firms could also experience operating losses or reduced operating margins. The willingness to accept operating losses as long as they correspond with high growth in users is consistent with firms deferring profits and sacrificing short-term profitability for longer-term gains. Finally, I look at changes in revenue per user. If revenue per user is growing, this means that firms are able to begin taking advantage of their earlier growth and monetize their user bases more effectively.

68. As shown in **Table 8**, I find that the internet companies I have reviewed enjoyed strong user and revenue growth around the periods of their IPOs. The median firm grew by 177 percent from two years prior to its IPO year until two years after its IPO year; all but 3 out of the 22 firms more than doubled their number of users. However, at the beginning of this time of rapid growth, only four firms experienced positive income from operations. Moreover, even two years after their IPO, only 10 firms, fewer than half of the total, had operating profits.[74] The lack of profits, combined with substantial growth of users is consistent with firms deferring profits to gain market share. This is not surprising and is consistent with incentives in music streaming; for music streaming services, in particular, the potential to earn greater online advertising rates

[73] The financial information is based on SEC filed 10-Ks. Because a company's fiscal calendar may differ, the actual time frame included during the year of its IPO may differ. The firms' IPO dates range from August 2010 through November 2013.

[74] For companies that do not have data available for two years following their IPO year (if, for example, their IPO was in 2013), the most recent annual data was used to calculate changes in financial and user metrics.

for access to the large user base makes foregoing short-run profits in favor of longer-run profits from greater market share a rational economic strategy.

Table 8: Select Financial Metrics from 2 Years Before and After the IPO

		"Users" (000's)		Revenue per "User"		Operating Income (000's)	
Company		2 Years Before IPO	2 Years After IPO	2 Years Before IPO	2 Years After IPO	2 Years Before IPO	2 Years After IPO
Pandora Media, Inc	6/15/2011	900,000	14,010,000	21 48	30 49	-27,407	-37,702
Angie's List, Inc	11/17/2011	412	2,484	110 75	98 89	-8,600	-31,081
Bazaarvoice, Inc	2/24/2012	63,249,918	214,966,000	0 61	0 78	-7,825	-52,516
Cornerstone Ondemand, Inc	3/17/2011	3,347	14,100	8 76	13 13	-5,360	-33,992
Demand Media, Inc	1/26/2011	16,858,000	33,141,000	11 77	11 91	-18,416	-18,483
E2open, Inc	7/26/2012	63	126	709 71	565 58	-5,637	-24,811
Facebook, Inc	5/18/2012	608,000	1,228,000	3 25	6 41	1,032,000	2,804,000
Groupon, Inc	11/4/2011	374	44,877	38 88	57 35	-1,077	75,754
Homeaway, Inc	6/29/2011	433	938	277 48	369 24	10,920	33,821
LinkedIn Corporation	5/19/2011	55,111	276,842	2 18	5 52	-3,355	47,812
NQ Mobile, Inc	5/5/2011	12,000	97,700	0 44	0 94	-5,343	2,272
Qihoo 360 Technology Co , Ltd	3/30/2011	231,000	475,000	0 14	1 41	4,461	103,099
RealPage, Inc	8/12/2010	3,833	8,113	29 37	39 71	-354	11,448
Renren Inc	5/4/2011	83,000	206,000	0 56	0 76	-2,728	-113,660
RetailMeNot, Inc	7/19/2013	349,992	560,432	229 73	374 42	38,479	52,729
Trulia, Inc	9/20/2012	7,935	38,809	2 49	3 70	-3,814	-24,143
Twitter, Inc	11/7/2013	117,000	240,900	0 91	2 76	-127,411	-635,831
Xoom Corporation	2/15/2013	517	1,060	96 83	115 32	-4,078	9,050
Yelp, Inc	3/2/2012	39,356	120,005	1 21	1 94	-9,506	-8,823
Youku Tudou, Inc	12/8/2010	82,000	503,000	0 06	0 57	-29,748	-76,831
Zillow, Inc	7/20/2011	7,611	54,358	2 30	3 63	-12,966	-16,949
Zulily, Inc	11/15/2013	791	3,172	180 21	219 33	-11,537	13,029
Zynga, Inc	12/16/2011	153,000	171,000	0 79	5 11	-52,778	-65,631

Source: Financial Data from Companies' Registration Statements for their IPO's and their SEC Annual Filings. Notes: [1] IPO Date is the "First Trade Date." [2] The general term used here is "user," even though the actual metric for a given company may be number of streams, number of page views, or some other metric. [3] Data for some companies for 2 years after the IPO was not available and either data from 1 year after or the year of the IPO was used.

69. Finally, NERA has also reviewed revenue per user and I find that revenue per user has increased in the period surrounding their IPO for 20 out of the 22 firms reviewed. Increases in revenue per user are consistent with growing firms better able to monetize their users after they achieve scale. This may reflect firms' choosing to keep their prices lower in order to grow their network; for companies reliant on advertising, it may reflect a choice to defer (or reduce) advertising in order to make the service more attractive to users and to grow the user base. This result is also consistent with firms' ability to better earn profits after they achieve sufficient scale.

2. Internet Firms Recognize that They Defer Profits

70. NERA has also reviewed public filings from the internet firms analyzed. In some cases, firms explicitly discussed their business strategy and the fact they are deferring profits in their public filings.

71. Facebook is among the most recognizable social media companies. Its financial results and its disclosures in its registration statement both indicate that it intended to defer profits in order to grow more quickly. Facebook grew from about 50 million monthly active users in 2007[75] to about 1.1 billion monthly active users in 2012.[76] Facebook recognized its emphasis on growth in its 2012 10-K filing:

> Our culture also prioritizes user engagement over short-term financial results, and we frequently make product decisions that may reduce our short-term revenue or profitability if we believe that the decisions are consistent with our mission and benefit the aggregate user experience and will thereby improve our financial performance over the long term.[77]

Thus, Facebook's financial performance and own statements are consistent with it deferring profits to achieve growth.

72. Twitter's financial performance and public statements also demonstrate the tendency of internet firms to defer profits. Twitter is a social media platform where users submit short messages that are shared with others. Twitter was launched in 2006, and by 2010 it had 54 million monthly active users. By 2013, its user base grew by a factor of 4 to 241 million users and it did not achieve an operating profit over this time. Twitter recognizes the importance of network effects on its business: "we benefit from network effects where more activity on Twitter results in the creation and distribution of more content, which attracts more users, platform

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75 "Number of Active Users at Facebook over the Years," Associated Press. October 23, 2012, available at http://finance.yahoo.com/news/number-active-users-facebook-over-years-214600186--finance html , accessed September 26, 2014.

76 Facebook, Inc. Form 10-K for the fiscal year ended December 31, 2012, p. 13.

77 Facebook, Inc. Form 10-K for the fiscal year ended December 31, 2012, p. 17.

partners and advertisers, resulting in a virtuous cycle of value creation"[78] and thus recognizes it is not prioritizing short-run operating results:

> We frequently make product and service decisions that may reduce our short-term operating results if we believe that the decisions are consistent with our goals to improve the user experience and performance for advertisers, which we believe will improve our operating results over the long term.[79]

3. Pandora's Strategy is Consistent with This Approach

73. Pandora's financial performance and public statements are similar to these other internet companies. Pandora was launched in 2005 and had 900 million listener hours by 2009; it had 17 times as many in 2013: 15.3 billion.[80] Over the same time period, its losses from operations grew as well: a loss of $27.4 million in 2009 and a loss of $37.7 million in 2013. However, between 2009 and 2013 revenue per 1,000 listener hours increased from $21.48 in 2009 to $30.49 in 2013, reflecting some combination of additional value from a bigger user base and/or an increase in the amount of advertising per hour. These financial results are consistent with statements made in Pandora's 10-K about increasing current growth:

> Our current strategy is to leverage any improvements in gross profit by investing in broadening distribution channels, developing innovative and scalable advertising products, increasing utilization of advertising inventory and building our sales force. These investments are intended to drive further growth in our business through both increased listener hours and monetization of those hours, and as a result we are targeting gradual improvements in gross profit over time. Our planned reinvestment of any resulting incremental gross profit will continue to depress any growth of bottom line profitability.[81]

74. Pandora's decision to defer their profits and focus on user growth has been confirmed by management; John Trimble, Pandora's Chief Revenue Officer, has confirmed: "[w]e've taken a really focused approach: Building our audience is paramount to building the

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78 Twitter, Inc. Form S-1, October 3, 2013 ("Twitter 2013 S-1"), p. 2.

79 Twitter 2013 S-1, p. 28.

80 Because of a change in fiscal calendars, the 2013 number, 14.01 billion, is based on 11 months. The figure shown in the text is grossed up to a full calendar year - 14.01 × (12 ÷ 11) = 15.3. [See Pandora 2013 10-K, p. 45.]

81 Pandora Media, Inc. Form 10-KT for the period ended December 31, 2013, p. 51.

business" and "[t]his is about audience."[82] Its Chief Financial Officer Mike Herring similarly noted that "[i]t's not a time to try and optimize profitability… We think we have a huge market opportunity in front of us."[83] Herring echoed this sentiment in an earnings call stating, "Given our substantial market opportunity, our bias continues to be revenue and market share growth over profitability."[84] This strategy has been rewarded by the market – Pandora's market capitalization has grown from about $3 billion at the time of its IPO to about $5 billion today.[85]

75. Other music streaming services also employ a similar business model in order to maximize long term profitability. Spotify has, to date, not turned a profit in the United States.[86] Similar to Pandora, Spotify executives have acknowledged deferring profits in order to grow market share. Spotify's Director of Artist Services Mark Williamson notes:

> We're in 55 countries at the moment, we launched 25 new countries in one day in December, and so our main priority right now is all about growth… We want to be in every country in the world and we want to bring more music to more people. A big part of that is investing in the business. Right now we are spending all our potential profits on growing the business and that's the main focus. This investment we're making now will pay dividends in the future.[87]

An article from CNET further substantiates this claim, noting, "Spotify's play is to build market share and the strategy for accomplishing that in the online music sector is old but proven. Give

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82 John McDermott, "If Pandora Can't Monetize Mobile Can Anyone?," Ad Age, January 10, 2013, available at http://adage.com/article/consumer-electronics-show/pandora-monetize-mobile/239096/ , accessed September 24, 2014.

83 Reuters, "For Pandora, getting more listeners costs more money," available at http://www.cnbc.com/id/101393732 , accessed September 27, 2014.

84 Pandora Media, Inc., Q4 2013 Earnings Call, February 5, 2014, p. 5.

85 http://ycharts.com/companies/P/market_cap , accessed September 26, 2014.

86 Jess Scanlon, "Will Spotify Ever Be Profitable?," Wall Cheat Sheet, available at http://wallstcheatsheet.com/technology/will-spotify-ever-be-profitable.html/?a=viewall , accessed September 29, 2014.

87 "Spotify and Streaming Bring $1 Billion to the Music Industry, but Can it Last?," Metro, available at http://metro.co.uk/2014/03/25/spotify-and-streaming-bring-1-billion-to-the-music-industry-but-can-it-last-4677004/ , last accessed September 29, 2014.

away songs for free and you'll find an audience. This method isn't cheap and the trick for music services has always been about getting into users' wallets once you get them to your site."[88]

76. As previously mentioned Spotify launched a free mobile tier, after previously requiring a paid subscription to gain mobile access; while this may have served as a means of converting free users, Spotify moved away from this model in order to grow its audience. As Forbes notes, "Why would Spotify remove the major perk from its subscription service?... the company thinks user growth is more vital than revenue growth at this moment… Platforms like Spotify derive their value and power from the size of their network."[89] Thus, it is clear that Pandora is not alone among music streaming services in prioritizing growth and market share over short-run profitability.

D. Pandora's Incentive to Invest in Market Share

77. The race for the benefits that accrue to short run market share in the long run means that the effect of cost advantages in the short run are enhanced. For example, if a firm has a cost advantage in a constant marginal cost business, it can earn more profits than its competitors. That additional profitability can be subsequently applied to strategies to grow market share – in particular to draw users away from competing services which do not enjoy that cost advantage –especially in a business in which investments in market share are likely to reap sizeable long-run returns. For example, a firm can spend more money on promotion, branding, and other share-building activities or simply invest in providing a better product than its competitors can provide (for example, by having more music and less advertising per hour than its competitors, due to the fact that the cost of music content is reduced), thus obtaining additional benefits due to the gains in share. Thus, price discrimination that gives a firm a cost advantage today can result in it having a long-term advantage.

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[88] Greg Sandoval, "Is Spotify's Business Model Broken?," CNET, October 5, 2012, available at http://www.cnet.com/news/is-spotifys-business-model-broken/ , accessed September 29, 2014.

[89] Steven Bertoni, "Is Spotify Shaking Up Its Entire Business Model?," Forbes, January 6, 2013, available at http://www forbes.com/sites/stevenbertoni/2013/12/06/is-spotify-shaking-up-its-entire-business-model/ , accessed September 29, 2014.

78. Pandora is benefiting from such a cost advantage. As described above, to the extent Pandora is subject to lower licensing rates than most webcasters, it enjoys lower licensing costs on each performance than both interactive services and most webcasters. Pandora itself recognizes it has this cost advantage in its primary line of business, and that it isn't an earned advantage but one arbitrarily conveyed to it:

> JASON HELFSTEIN: And I guess like the most confusing thing around this is basically you pay two different rates. You pay one rate for the ad supported, you pay the higher rate for the subscription.
>
> MIKE HERRING: Yes.
>
> JASON HELFSTEIN: Sirius pays roughly the same rate you pay for the ad (inaudible). And you benefit from the lower price because of the act of Congress.
>
> MIKE HERRING: Yes.[90]

This provides a clear benefit for Pandora. It has explicitly stated that it invests its gross profits (which are enhanced from paying lower rates) into growing its user base, a move that will tend to depress short-run profitability.[91]

79. This cost advantage is a competitive advantage over other competitors, one that Pandora explicitly recognizes: "At the conference, Paschel [a Pandora executive] said Pandora's model -- forsaking direct deals with labels to get its music instead through a license structure carved out by regulators – means Pandora's market is fundamentally bigger. Subscription services like Beats and Spotify have higher licensing costs per track than Pandora, and that sets them up to rely on their ability to entice listeners to become paying subscribers. Pandora, on the other hand, turns to its free, ad-supported service as its big moneymaker. The audience size in

[90] Pandora Media, Inc. at Oppenheimer Technology, Internet & Communications Conference, Oppenheimer, August 13, 2014.

[91] See footnote 81.

the latter case is unfettered by getting listeners to cough up $10 a year, and so has the size advantage."[92]

80. Pandora has made use of this advantage and the additional profits it confers to take several actions to attract customers. For one, Pandora exposes its customers to relatively few ads while they listen. In a recent earnings call, Michael S. Herring, CFO and Executive Vice President of Pandora reported that Pandora averages "three ads per hour," or "a minute and a half of ads an hour."[93] Pandora has also recently stated that it is capping ad frequency, with even the highest maximum frequency being three minutes per hour in markets where Pandora is established.[94]

81. Ads are undesirable for listeners, and any company that can reduce them will be able to attract more users and grow its share. As Brian P. McAndrews, Chairman, President, and CEO of Pandora states, Pandora can "balance the listening experience with the advertising experience."[95] To the extent Pandora can minimize advertising, it increases the amount of music it plays per hour (and make their product more attractive compared to other alternatives). Pandora also uses these gains to invest in specific product development efforts. As Mr. McAndrews states, "we are ahead of everybody in terms of building out a sales force designed and focused on this area (sic)."[96]

E. Despite Operating Losses, Pandora's Financial Performance has Been Strong

82. In addition to the evidence discussed above relating to the entry and survival of webcasting firms, Pandora's SEC filings make it clear that despite its long-run market share strategy, there is sufficient economic return in webcasting. First, as seen in **Figure 13**, Pandora's

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92 Joan E. Solsman, "Pandora Station Suggestions Amp Up Personalization," CNET News, January 15, 2014, available at http://www.cnet.com/news/pandora-station-suggestions-amp-up-personalization /, accessed September 26, 2014.

93 Pandora Media, Inc. Q2 2014 Earnings Call, July 24, 2014, ("Pandora Q2 2014 Earnings Call"), p. 15.

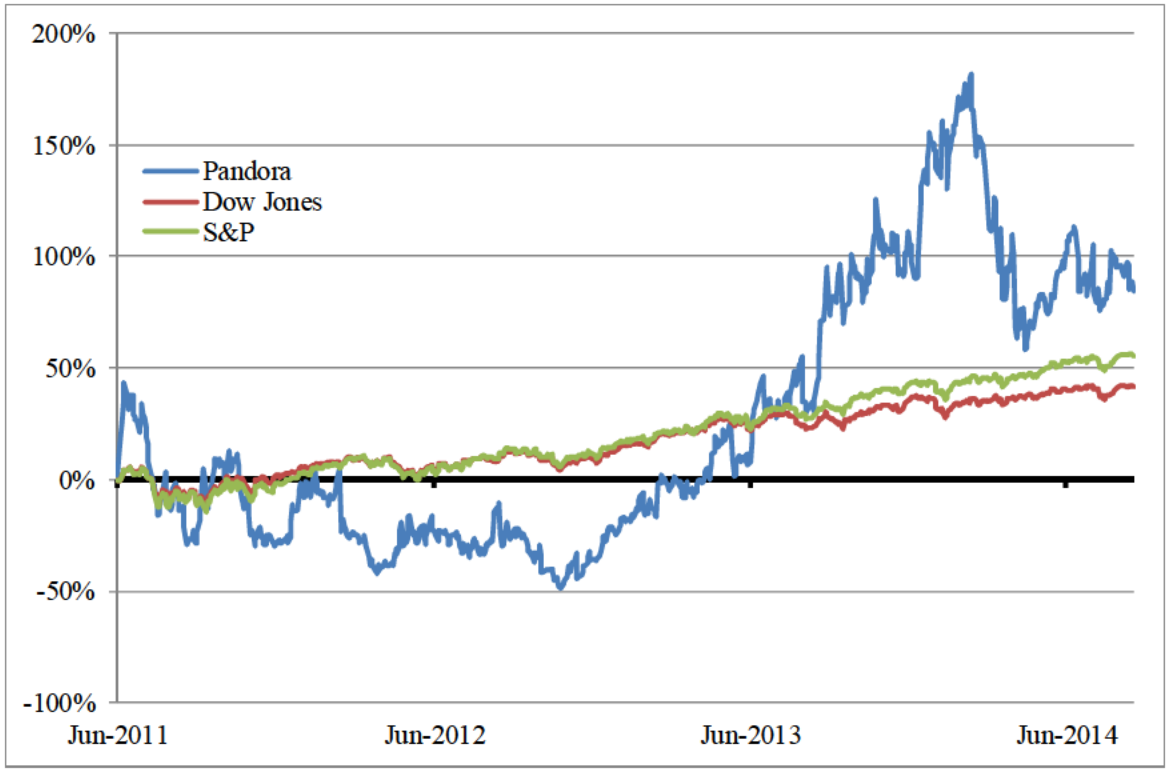
94 Pandora Media, Inc. at Oppenheimer Technology, Internet & Communications Conference, Oppenheimer, August 13, 2014.

95 Pandora Q2 2014 Earnings Call, p. 16.

96 Pandora Q2 2014 Earnings Call, p. 11.

stock price has outperformed the market writ large over the past several years; thus, despite negative net profits over the past several years, it is able to attract investors. Second, while Pandora has earned a negative net profit over the past several years, it has very healthy gross margins – for example, for the 11 months ending December 31, 2013, Pandora earned about $244 million in gross profits against about $600 million in revenue, a gross profit margin of about 41 percent. And, while it has operating expenses large enough to lead to a negative net margin, by far the largest category of these additional expenses is marketing costs. Finally, Pandora's balance sheet shows that its total assets grew from about $219 million at year-end 2012 to over $673 million at year-end 2013, while its total liabilities grew only from about $120 million to about $165 million over the same time period.

Figure 13: Pandora Historical Indexed Stock Price (June 2011 – Sep 2014)[97]



[97] Sources: Pandora: Google Finance: Pandora Media, Inc. Historical Prices, available at http://www.google.com/finance/historical?q=NYSE%3AP&ei=zJglVPjdJ5S2qQGAt4HgBg , accessed September 26, 2014; Dow Jones: Federal Reserve Bank of St. Louis: Dow Jones Industrial Average (DJIA), available at http://research.stlouisfed.org/fred2/series/DJIA/downloaddata , September 26, 2014; S&P: Federal Reserve Bank of St. Louis: S&P 500, available at http://research.stlouisfed.org/fred2/series/SP500/downloaddata , accessed September 26, 2014.

F. Pricing Below Licensing Costs Can Be a Rational Economic Decision

83. The discussion above points out that what matters to a firm in setting prices is its stream of profits in the long run. A firm assesses the total stream of expected profits, including the profits from future plays to a customer, in determining its price (or advertising structure) today. Thus, firms can and do choose to set price (even a zero price) such that licensing costs or total marginal costs may exceed revenues if it believes doing so increases the likelihood it gets a subsequent flow of business for which it will eventually lead to sufficiently large future profits. As I have discussed previously, network externalities enhance a firm's incentive to increase market share by, for example, "buying market share" by charging a price below costs so as to induce a consumer to join the company's network rather than rival networks. The firm then tries to establish a relationship with that consumer such that, when prices are later increased, the consumer does not switch to a competing offering.

84. Charging a price below cost then, or even a zero price, makes the difference between price and cost serve as an investment expenditure, attracting a customer from whom the firm expects to receive a future flow of profits exceeding, in present value, the expenditure today. Thus it is reasonable that a firm earn revenue less than per play cost, in the short run. Indeed, firms whose business models involve licensing and distributing creative content typically do pay a significant percentage of their revenue towards content acquisition.

G. Pandora's Content Acquisition Costs are Below Those of Other Online Content Distributors

85. Over the past several years, Pandora's content acquisition costs have averaged about 56 percent of revenues. As shown in **Figure 14**, relative to other streaming (both audio and video) companies, this is a relatively low percentage of profits paid to content acquisition. As discussed above, Spotify, a directly-licensed interactive streaming service, has stated that it pays about 70 percent of its revenues towards content acquisition.[98]

[98] See footnote 60.

86. High content acquisition costs are common to other large, successful firms that provide media content to their customers. Netflix, the popular video streaming service, reports in its 10-K filings that in 2012 and 2013 its domestic streaming business segment paid on average about 69 percent of revenue towards "cost of revenues," which is largely licensing fees for its content.[99] Hulu, another popular video streaming service, paid over 72 percent of revenues on content acquisition costs in 2012.[100] Similarly, it is well known that the Apple's agreements with record labels typical give 70 percent of every digital track sale to the rights holders, with 30 percent going to Apple.[101] While the negotiations that have led to these rates are private, there is little to indicate that these firms have overpaid – Netflix, Apple, and Hulu are widely seen as leaders in their industries.

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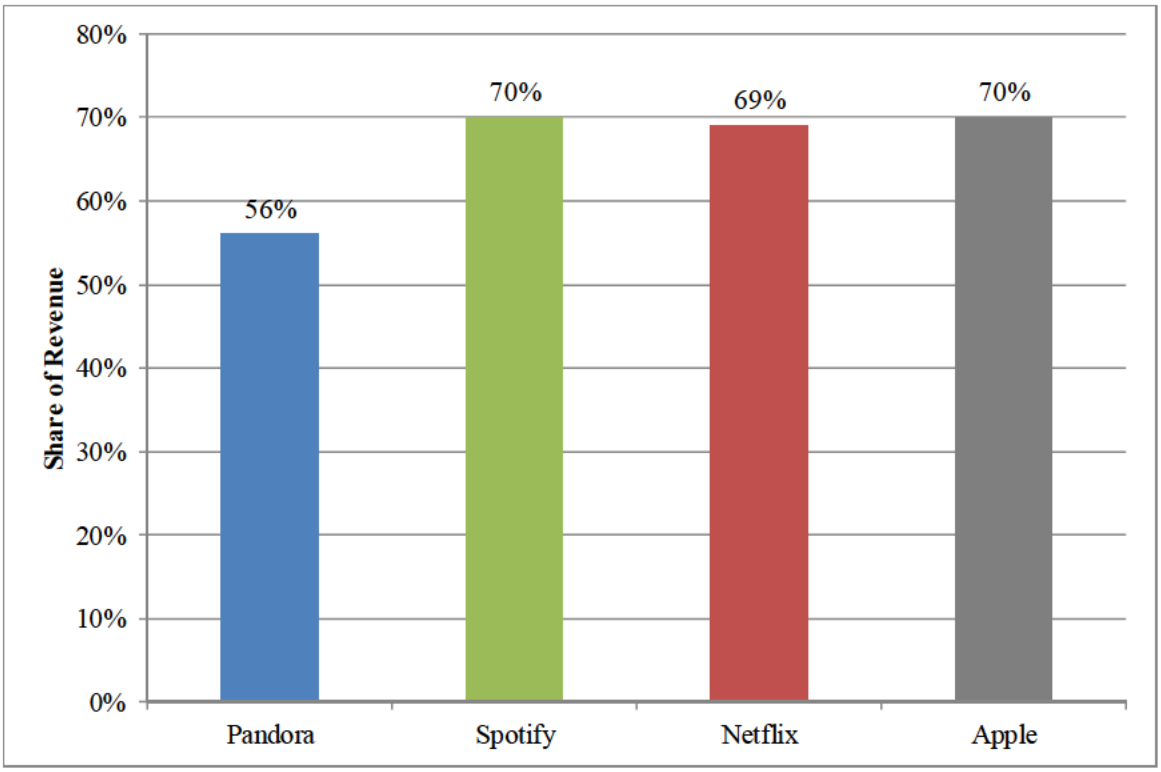
[99] Netflix, Inc., Form 10-K for the fiscal year ended December 31, 2013 ("Netflix 2013 10-K"), p. 19.

In its 2013 annual report, Netflix noted that "[f]or the Domestic and International streaming segments, content licensing expenses, which include the amortization of the streaming content library and other expenses associated with the licensing of streaming content, represent the vast majority of cost of revenues. [Netflix 2013 10-K, pp. 18-9.] Its filings also demonstrate that Netflix's international streaming service's cost of revenue is over 100 percent of revenues over the same time period. [Netflix 2013 10-K, p. 20.]

[100] Jennifer Van Grove, "Embrace the Mushy Mush! Hulu's 2012 Numbers Are a Mixed Bag," Venture Beat, December 17, 2012, available at http://venturebeat.com/2012/12/17/hulu-2012/ , accessed September 24, 2014.

[101] Steve Knopper, "The New Economics of the Music Industry," Rolling Stone, October 25, 2011, available at http://www.rollingstone.com/music/news/the-new-economics-of-the-music-industry-20111025 , accessed September 26, 2014.

Figure 14: Content Acquisition Costs as a Share of Revenue



Source: See ¶¶ 89-90.

87. Apple's 70-30 split with music rights holders is similar to its split with developers on the "App Store" for the iPhone. Through the iOS Developer Program, 70 percent of all revenues associated with an app (either the sale price of the app, or the revenues earned from in-app purchases) go to the developer and Apple retains a 30 percent share.[102] This is not limited to small developers of apps, as Apple also keeps 30 percent of revenues earned via Microsoft's Office 365 subscription package – a price that, if anything, Microsoft felt was too high, before it ultimately agreed to those terms.[103]

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[102] Offering made by Apple online at https://developer.apple.com/programs/ios/distribute.htm l, accessed September 29, 2014.

[103] Ina Fried, "Microsoft Is Selling Office 365 Within iPad Apps, and Apple Is Getting Its 30 Percent Cut", re/code, March 27, 2014, available at http://recode net/2014/03/27/microsoft-is-selling-office-365-within-ipad-apps-and-apple-is-getting-its-30-percent-cut/ , accessed September 29, 2014; John Paczkowski, "Exclusive: Microsoft Pressing Apple to Take a Smaller Cut on Sales Inside Office for iOS", All Things D,

88. Furthermore, Pandora's content costs as a percentage of revenue are only as high as they are due to, to some extent, its own decisions. Pandora could choose to increase advertising and likely raise revenue (which would reduce licensing costs, as more ads would displace some plays) and thus lower the share of its revenue that pays for content. As previously noted in Section III.C.3, Pandora has chosen to maximize market share over profits in the short-run, minimizing ads to bolster the user experience. Richard Greenfield, a BTIG analyst, explains:

> On the surface, the rates paid by Pandora and other online radio services appear onerous and in need of congressional relief. However, the reason why companies such as Pandora pay such high royalty rates as a percentage of revenues is because they severely limit audio advertising to protect the user experience and keep people on the platform. If Pandora ran several minutes of audio ads per hour (the way terrestrial radio does) vs. just a few 15 second spots, the percentage of revenues paid out as royalties would be dramatically lower and would be more in line with satellite radio or cable TV. Interestingly, Spotify's radio product runs substantially more advertising per hour than Pandora. We suspect this is a business decision focused on reducing royalty costs relative to revenues.[104]

The New York Times further substantiates this claim noting, "[t]hroughout the music industry there is a wide belief that Pandora could solve its financial problems… by simply selling more ads."[105] Thus, Pandora does not have high costs of content acquisition compared to other music streaming firms or to other media firms pursuing a content distribution line of business, and Pandora also controls the relative magnitudes of content costs and revenues and so is making a conscious decision to incur the proportion of content costs about which it frequently complains.

December 11, 2012, available at http://allthingsd.com/20121211/microsoft-pressing-apple-to-take-a-smaller-cut-on-sales-inside-office-for-ios/ , accessed September 29, 2014.

[104] Eric Savitz, "Pandora Asks Users to Lobby Congress on Royalty Rates (Updated)," Forbes, September 24, 2012, available at http://www forbes.com/sites/ericsavitz/2012/09/24/pandora-asks-users-to-lobby-congress-on-royalty-rates/ , accessed September 24, 2014.

[105] Ben Sisario, "Proposed Bill Could Change Royalty Rates for Internet Radio," New York Times, September 23, 2012, available at http://www nytimes.com/2012/09/24/business/media/proposed-bill-could-change-royalty-rates-for-internet-radio.html?adxnnl=1&adxnnlx=1411409088-6W82/FlfCwrvwBGb06fAeg , accessed September 24, 2014.

IV. THERE IS NO EVIDENCE THAT WEBCASTING SERVES A SIGNIFICANT PROMOTIONAL ROLE

89. I have also been asked to discuss the ways in which webcasting competes with other modes of music distribution and, further, the extent to which statutory webcasting competes with other forms of music streaming and digital distribution. As I describe in this section, there is little evidence that statutory webcasting promotes the sales of digital or physical media and it is clear that statutory webcasters compete with (and cannibalize revenue from) other directly-licensed music streaming services, such as interactive services. This can be seen in, for example, the failure of Apple's iTunes Radio service to prevent a decline in sales, the intense competition between statutory and non-statutory music streaming services and the attraction of Pandora's free service, whose popularity helps to keep listeners from other music streaming services which provide higher payments to record labels.

A. Evidence Indicates that Webcasting Does Not Drive Sales

90. Despite some claims that webcasting today is a promotion engine to other music industry revenue sources, such as downloads, evidence I have reviewed casts doubt on this claim. Indeed, broad industry trends suggest that while music streaming has continued to grow in recent years, physical and digital sales have declined. Pandora, for example, grew from 13.5 billion listening hours in 2012 to 16.7 billion hours in 2013 (and grew from 62.4 million active users in November 2012 to 72.4 million active users at the end of November 2013), while total digital music sales declined from 2012 to 2013.[106]

91. It is important to note that the existence of a "referral link" from a statutory webcaster to an iTunes or Amazon sale of digital (or physical) media is *neither* necessary nor

[106] Maggie McGrath, "Pandora Hits a Sour Note With 2014 Outlook," Forbes, February 5, 2014, available at http://www forbes.com/sites/maggiemcgrath/2014/02/05/pandora-hits-a-sour-note-with-2014-outlook/ , accessed October 2, 2014; "Pandora Announces November 2013 Audience Metrics," Pandora News Release, December 4, 2013, available at http://investor.pandora.com/phoenix.zhtml?c=227956&p=irol-newsArticle&ID=1881886&highlight= , accessed October 2, 2014.

I note that in December 2013, Spotify announced that it had streamed 4.5 billion hours of music in the prior year, slightly more than one quarter of Pandora's audience. Similarly, Spotify announced in March 2013 that it had six million subscribers. [Shara Tibken, "Spotify Users Have Streamed 4.5B Hours of Music in Past Year," CNET News, December 11, 2013, available at http://www.cnet.com/news/spotify-users-have-streamed-4-5b-hours-of-music-in-past-year/ , accessed September 24, 2014.]

sufficient evidence of a promotional relationship between statutory webcasting plays and sales. Because statutory webcasting consumers have revealed themselves to enjoy listening to music, it is unsurprising that they may purchase songs or albums from iTunes or Amazon (or other sellers). However, one should conclude, as an economic matter, that statutory webcasting leads to additional sales of recorded music only if there are sales made (through referral links or otherwise) that would not have otherwise been made, absent the streaming. That is, if the play(s) did not happen, there would have been fewer sales. The existence of referral links simply does not speak to any such relationship. Nor, as noted above, would the fact that a song with more plays may have more sales suggest such a relationship – indeed, even if there was a negative relationship between statutory webcasting plays and sales, one would expect to see that more popular songs have higher levels of both webcasting plays and sales.[107] This holds not only for the relationship between statutory webcasting and music sales, but webcasting and other recorded music revenue streams, such as revenues from interactive services such as Spotify.

92. Indeed, a recent RIAA report shows that, compared to the first half of 2013, the first half of 2014 saw a 12 percent decline in physical sales ($115.4 million) compared to essentially flat digital revenue (a drop of $10.8 million).[108] These same statistics show that, while digital revenues are flat, that is because music streaming and downloads are moving in equal and opposite directions – download revenues fell by about $176.3 million (about 11 percent), while digital subscription and music streaming revenue rose by about $186.2 million (about 28 percent). That is, at a macro level, at least, if there is a promotional benefit to music streaming, it has been insufficient to stem the continued decline of physical and (more recently) digital sales. This, however, is not just a macro effect. At a micro level, there is also evidence that music streaming does not promote digital sales.

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[107] Indeed, one can see exactly this relationship in looking at the relationship between piracy and sales – the most pirated tracks are very often the ones with the most sales. One would not conclude from this fact, however, that piracy actually lead to the high level of sales!

[108] RIAA, Mid-Year Industry Shipment and Revenue Statistics, 2014, p. 3.

93. In particular, with the recent introduction of iTunes Radio, there is evidence that webcasting does not increase digital download sales. A recent Billboardbiz article explains that iTunes Radio was disappointing in terms of digital download sales:

> This finding should deflate some of the optimism that originally surrounded iTunes Radio. Launched Sept. 18, Apple's answer to Pandora was thought by many in the music business to have potential for incremental track purchases. The service tightly integrates a buy button that allows the listener to buy a track from the iTunes Music Store. It got off to a quick start, attracting 20 million listeners in about a month. But no sales boost ever materialized.[109]

Referencing a recent survey performed by Music Forecasting and citing Sam Milkman, its executive Vice President, Peoples goes on to explain, "Buying music on iTunes Radio clashes with the nature of radio. Users simply don't want to lean forward to buy music when they're enjoying iTunes Radio's lean-back listening experience."[110] Although the article argues music streaming does not necessarily detract from download sales, the survey findings suggest that the promotional effect is negligible at best.

94. Indeed, the "lean-back" feature of iTunes Radio highlights the competitive relationship between statutory webcasting and interactive (directly-licensed) streaming services. As discussed above, as all forms of music streaming services increasingly become mobile and move into cars and the like, this preference (and, in the case of solitary drivers of cars such as many commuters, requirement) for lean-back listening serves to reduce the differences between

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[109] Glenn Peoples, "Business Matters: Study Shows Why iTunes Radio Lacks Big Impact on Download Sales," Billboardbiz, January 28, 2014, available at http://www.billboard.com/biz/articles/news/5885546/business-matters-study-shows-why-itunes-radio-lacks-big-impact-on-download , accessed January 29, 2014.

See also, for example, Glenn Peoples, "Business Matters: Track Sales on Downward Trend in 2013. Did iTunes Radio Play a Part?," Billboardbiz, November 21, 2013, available at http://www.billboard.com/biz/articles/news/digital-and-mobile/5800493/business-matters-track-sales-on-downward-trend-in-2013 , accessed September 26, 2014; Paul Resnikoff, "iTunes Radio Is Having Zero Impact on Paid Downloads…," Digital Music News, December 9, 2013, available at http://www.digitalmusicnews.com/permalink/2013/12/09/itunesradiozeroimpact , accessed September 26, 2014.

[110] Glenn Peoples, "Business Matters: Study Shows Why iTunes Radio Lacks Big Impact on Download Sales," Billboardbiz, January 28, 2014, available at http://www.billboard.com/biz/articles/news/5885546/business-matters-study-shows-why-itunes-radio-lacks-big-impact-on-download , accessed September 26, 2014.

statutory webcasters and directly-licensed services and to strengthen the competition among them.

95. This argument – that free music streaming services are promotional to subscription-based services – has been advocated by others as well: as the argument goes, users of free or low-cost, ad-supported services will transition to paid subscriptions leading to increased payments to the copyright holders. Mark Mulligan, a music industry expert, has written extensively on the subject. In an article analyzing the growth of Spotify subscription users to 10 million, Mulligan notes that subscribership was flattening out, but free user growth was "dynamic."[111] Although Spotify's current ratio of free to paid users is low, given the relative growth rate of both groups that ratio will likely continue to increase in the future. Mulligan argues that most subscription users of music streaming services are "music aficionados" or "super fans" that have a higher willingness to pay for advertisement-free music services. Spotify is generally considered to be on the high end of conversion. Using Pandora as another example, the service has a conversion to paid subscriber rate of about 4.4 percent.[112] As shown in **Figure 15**, premium subscribers are projected to remain stagnant at [redacted] percent of music streaming users globally through 2019. A MIDiA Research survey found that only [redacted] percent of music streamers would pay for an unlimited music service.[113]

96. Free, ad-based statutory services offer lower costs and enough of a satiating music access option, particularly to less zealous music customers – those for whom the ability to select a specific song is not of critical importance. In the absence of statutory webcasting, then, it follows that these users would be more likely to sign up for subscription-based interactive competitors. While not all would, economic logic – consistent with Pandora's own statements

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[111] Mark Mulligan, "What 10 Million Spotify Subscribers Actually Means," Music Industry Blog, May 21, 2014, available at http://musicindustryblog.wordpress.com/2014/05/21/what-10-million-spotify-subscribers-actually-means/ , accessed September 24, 2014.

[112] Glenn Peoples, "Pay for YouTube? Challenges Ahead for Google's Next Music Subscription Service," Billboardbiz, August 22, 2014, available at http://www.billboard.com/biz/articles/news/digital-and-mobile/6229104/pay-for-youtube-challenges-ahead-for-googles-next-music , accessed September 3, 2014.

[113] Mark Mulligan and Alun Simpson, MIDiA Research, "The Streaming Effect, Assessing the Impact of Streaming Music Behavior," August 2014.

about its competition with interactive services discussed below – makes clear that statutory webcasting licensees do cannibalize the revenues that copyright holders would otherwise earn from these services, as I discuss in more detail in the next section.

Figure 15 (RESTRICTED): Global Music Streaming Users Forecast: Premium vs. Free Ad-Supported (2014-2019)

Source: MIDiA Research, Music Model, July 2014.

B. Statutory Webcasters Compete Directly with Subscription Services

97. If a webcaster truly provided promotional benefits to rights holders, then one would expect to see evidence that webcasting plays lead not only to increased sales but also to increased revenues (via subscriptions or increased non-subscription plays). For example, one would expect to see that Pandora listens serve to drive listeners to their subscription services, or, perhaps, to interactive music streaming services such as Spotify. Similarly, one would (subject to the caveats above) expect to see that webcasters viewed the iTunes Music Store as a complementary service, rather than as a competitor. One need look no farther than the

statements made by statutory webcasters to see evidence that there is competition between webcasters and other music distribution channels.

98. Pandora's view is clear; it views interactive and digital sales services as competitors. For example, Pandora's 2012 10-K states

> Our competitors include:
>
> **Other Audio Entertainment Providers**. We face competition from providers of interactive on-demand audio content and pre-recorded entertainment, such as Apple's iTunes Music Store, RDIO, Rhapsody, Spotify and Amazon that allow listeners to select the audio content that they stream or purchase. This interactive on-demand content, is accessible in automobiles and homes, using portable players, mobile phones and other wireless devices. The audio entertainment marketplace continues to rapidly evolve, providing our listeners with a growing number of alternatives and new media platforms. [114]

Pandora recognizes it is providing a service that results in less music being played through both interactive distribution channels and results in less sales through digital distribution, such as the iTunes Music Store, as well as explicitly recognizing that they will compete in the future with "new media platforms." Pandora has stated that it does not intend to promote their subscription services: "Pandora also offers a paid, ad-free service, but unlike many app vendors with a 'freemium' business model, Pandora doesn't actually push the paid model very hard. 'We monetize the ad side so well that we don't push the ad-free service,' he (Eric Bieschke, Pandora Chief Scientist and Vice President of Playlists) said."[115] Founder Tim Westergren concurred:

> VentureBeat: Do you see Pandora as mainly a subscription play or an advertising play?
>
> Tim Westergren: We don't think that radio is a paid proposition for the vast majority of people. So it's more of an advertising model.[116]

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[114] Pandora Media, Inc. Form 10-K for the fiscal year ended January 31, 2012, p. 7.

[115] Michael Hickins, "Pandora's Improved Algorithms Yield More Listening Hours" CIO Journal (Wall Street Journal), April 1, 2014 (accessible at http://blogs.wsj.com/cio/2014/04/01/pandoras-improved-algorithms-yield-more-listening-hours/ , accessed September 28, 2014).

[116] Mark Sullivan, "My Breakfast with Westergren: Pandora's Founder Talks About Royalties, Ads, brands, and bands," VentureBeat, September 23, 2014, available at http://venturebeat.com/2014/09/23/my-

99. Pandora's recognition that it takes listening hours away from other music streaming services is not surprising, as the channel through which Pandora competes with other audio entertainment providers is clear – the number of hours in a day and the number of music hours consumed in a day. To the extent the music users are selecting among a variety of forums to serve their needs, it would follow that music consumed one way could easily crowd out music consumed via alternative methods. If, for example, a user listens to Pandora in their car on a commute to and from work, that user cannot be listening to a Spotify playlist, broadcast radio, or digital audio tracks purchased from iTunes. If Pandora were not available, or if it were less attractive to the user (perhaps because it had more advertising spots per hour, for example) it would stand to reason that users who would otherwise use Pandora would be more likely to use Spotify or purchase digital audio tracks as an alternative; in both cases, payments to rights holders would increase.[117]

100. Furthermore, in general, subscription services struggle to compete with ad-supported webcasting because for many users there is no need to "upgrade" to the subscription product. As statutory webcasting has grown and become increasing convenient and customized (whether via Pandora, iHeartRadio or others) the listening experiences that these services provide may become sufficiently personalized, in terms of distributing music matching their tastes, that it may greatly reduce their incentive to purchase music (or music subscriptions) for interactive consumption.

101. Indeed, customized webcasters offer a music delivery service featuring a significant degree of selectivity. Thus, unlike with terrestrial radio, the incentives for listeners to "upgrade" to the additional offerings provided by subscription services (or digital downloads) are greatly diminished. If statutory services can provide customers with a music distribution channel

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breakfast-with-westergren-pandoras-founder-talks-about-royalties-ads-brands-and-bands/ , accessed September 26, 2014.

[117] A 99-cent track on the iTunes Music Store yields about 69 cents in royalty payments to the record labels. While some of these payments go to cover the 9.1 cent mechanical royalty, nonetheless this magnitude dwarfs that of a non-subscription stream, which on Pandora yields payment of only 0.12 cents in 2013. Thus, Pandora needs to play a song several hundred times – to an individual user – to generate the same revenue that a recorded music copyright holder would earn on a single MP3 sale to that user.

that will "play only music you'll love,"[118] there is, as a matter of economic logic, a reduced incentive to engage with other distribution channels. As expressed by Pandora founder Tim Westergren: "[o]ne of the moments when I got really excited was when I first used Pandora in the car… Fifteen minutes later I had forgotten I was listening to Pandora, and I was thinking 'this radio station is just nailing it; they've played like four songs in a row that I just love.'"[119] Pandora is able to reach a variety of demographics with its customization technology: "we don't have any trouble reaching anybody. Music is universal. It reaches everybody. It's also because of the interactivity and curation that we provide."[120] If Pandora works so well at delivering personalized content in a free, ad-supported form, what need is there for subscription services or downloads?

102. These free statutory services, then, which pay generally lower rates to rights holders than do directly-licensed services (and the sales of digital (or physical) media), have the goal of becoming a "destination" product rather than a jumping off point. Few of Pandora's customers are paid subscribers; only about 15 percent of its revenue between 2011 and 2013 came from premium subscription service – most comes from ad revenues from its free offering, and as indicated in Section IV.A, its conversion rate from free to subscription is quite low. This dynamic will be particularly important as revenues from streaming services are forecast to outgrow other avenues of digital distribution before the upcoming licensing period is up. [See **Figure 10** above.] Indeed, Pandora has pro-actively worked to reduce subscribers by improving the quality of its free product on mobile:

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[118] Pandora Company Information, available at http://www.pandora.com/about , accessed September 24, 2014.

[119] Mark Sullivan, "My Breakfast with Westergren: Pandora's Founder Talks About Royalties, Ads, brands, and bands," VentureBeat, September 23, 2014, available at http://venturebeat.com/2014/09/23/my-breakfast-with-westergren-pandoras-founder-talks-about-royalties-ads-brands-and-bands/ , accessed September 26, 2014.

[120] Mark Sullivan, "My Breakfast with Westergren: Pandora's Founder Talks About Royalties, Ads, brands, and bands," VentureBeat, September 23, 2014, available at http://venturebeat.com/2014/09/23/my-breakfast-with-westergren-pandoras-founder-talks-about-royalties-ads-brands-and-bands/ , accessed September 26, 2014.

> We experienced a step function increase in subscriptions when we applied the free mobile listening hour limit early in the year. When we removed the free mobile limit on September 1, subscription growth moderated.[121]

That is, making free mobile streaming less attractive lead to a "step function increase" in subscriptions; several months later, Pandora reversed course, improved the free mobile streaming option again and slowed subscription growth.[122] This is consistent with Pandora's belief that the future of webcasting is not primarily in subscription services and that it has come to this realization before its competitors:

> As you know, a lot of the noise in the music streaming space has been around subscription models. And while those are a different business area that people can obviously choose to pursue and may be very attractive, it's not where our focus is and not where our core strengths and where our big opportunity is or where we see the big opportunity. And so we feel like we're well ahead of other players in the market in that respect.[123]

The attraction of free webcasting services to consumers helps to divert listeners from subscription services (or, for that matter even from other free services, such as those of directly-licensed services like Spotify). Thus, if Pandora is a destination, as is clearly its goal, then there is no reason to believe that its user base – which is already the largest in the streaming business – will shift to other distribution channels that result in higher payments to record companies; instead, it serves to cannibalize these other revenue sources.

103. Furthermore, the very features that Pandora develops to attract customers to its service also serve to lock-in that customer, dissuading them from switching to a subscription service. As I described above, when someone creates a set of "stations" in the free Pandora service, and customizes those stations through their interactions over time, they are less likely to move on to a subscription service, as their music feed becomes increasingly well-matched to their tastes. "Pandora has also created forced brand loyalty within its website because, as users give 'thumbs up' and 'thumbs down' ratings to songs, they get a progressively more

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[121] Pandora Media, Inc. Q4 2013 Earnings Call, February 5, 2014, p. 4.

[122] See also Pandora Media, Inc., Q1 2013 Earnings Call, May 23, 2012, p. 8.

[123] Pandora Q2 2014 Earnings Call, p. 11.

personalized radio station, prompting them to stay with Pandora."[124] Further, Pandora is capturing individual listening time simply through improvements in the quality of its music selection technology: "Pandora has made 'measurable gains in the amount people listen based on improvements in algorithms… Percentage point increases year after year after year.'"[125] Customized non-interactive webcasting is inherently designed – reasonably, because of a simple profit motive – to retain customers and keep them out of the hands of subscription webcasting services, which pay higher royalty rates. In denying the need for a demographic focus, Pandora Founder Tim Westergren explained that not only is music universal in its reach, Pandora did not need such a focus "because of the interactivity and curation that we provide."[126]

104. The attractiveness of free webcasting, relative to subscription services, is likely to increase over time as webcasters develop mechanisms that provide streams that are more attractive to listeners, by better matching their tastes. For example, Pandora has found, by conducting research on its own listener data, that songs should be repeated more often when a listener is at work than if elsewhere.[127] Pandora also continuously improves its recommendations by using the data it collects on skips/thumbs-up/thumbs-down. As one article puts it, "Pandora can merge machine listening with nearly a decade of human intuition to create a deeper understanding of the music its service spins."[128] Pandora has found with experience that "the most effective way to connect people with a series of songs they're sure to love is by weaving

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[124] Connor Foreman, "Should Pandora Be Worried About Spotify?", The Motley Fool, December 17, 2013, available at http://www fool.com/investing/general/2013/12/17/should-pandora-be-worried-about-spotify.aspx , accessed September 26, 2014.

[125] Michael Hickins, "Pandora's Improved Algorithms Yield More Listening Hours" CIO Journal (Wall Street Journal), April 1, 2014, available at http://blogs.wsj.com/cio/2014/04/01/pandoras-improved-algorithms-yield-more-listening-hours/ , accessed September 28, 2014.

[126] Mark Sullivan, "My Breakfast with Westergren: Pandora's Founder Talks About Royalties, Ads, brands, and bands," VentureBeat, September 23, 2014, available at http://venturebeat.com/2014/09/23/my-breakfast-with-westergren-pandoras-founder-talks-about-royalties-ads-brands-and-bands/ , accessed September 26, 2014.

[127] John Paul Titlow, "At Pandora, Every Listener Is A Test Subject," Fast Company, August 14, 2013 available at http://www fastcolabs.com/3015729/in-pandoras-big-data-experiments-youre-just-another-lab-rat , accessed September 26, 2014.

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together both approaches: machine learning techniques and good, old-fashioned human brains."[129] In turn, the more that stream of song is loved, the less the listener feels the need to have the additional level of control offered by interactive subscription services.

105. The attractiveness of free webcasting over those subscription services will also increase over time as mobile webcasting services expand, as described in Section II.D.1. In "lean-back" services, where the listener is less inclined to interact with the service, the subscription service offers much less of a benefit to justify the price differential. Therefore, as the share of such services expands, the adoption of subscription services by new users instead of free (statutory) alternatives will be lower than currently, and the rate at which listeners convert from free (statutory) to subscription services will fall below its already low level. For all these reasons, then, free webcasting will likely become increasingly attractive – and more competitive with other modes of distribution – over time.

C. Statutory Fees Bias Competition in Webcasting

106. As discussed above, the advantage that Pandora has in lower licensing fees than its competitors serves to heighten this diversion from other services which more strongly compensate rights holders. License fees for directly-licensed interactive services are consistently much higher than those of statutory licensees and there are differences in rates even among statutory licensees. Thus, there is substantial variation in licensing cost structures among music streaming services.

107. These differences in rates have implications for the nature of competition in music streaming and in music consumption more broadly. Differential rates paid for essentially the same rights (i.e., the rights Pandora and other statutory webcasters share) distort market outcomes. To the extent that Pandora has a lower cost position than even other statutory webcasters (as well as directly-licensed competitors), it is able to take advantage of its lower cost position in a way that almost all others cannot and, in doing so, is able to make its free service

[129] John Paul Titlow, "At Pandora, Every Listener Is A Test Subject," Fast Company, August 14, 2013 available at http://www fastcolabs.com/3015729/in-pandoras-big-data-experiments-youre-just-another-lab-rat , accessed September 26, 2014.

even more attractive – it plays more music and has lower ads. This serves then to subsidize Pandora – and directly advantage it – relative to other statutory webcasters. As an economic matter, then, the resulting competition between Pandora and other competitors for listening hours is distorted in Pandora's (and other webcasters' with the same cost structure) favor.

108. If, on the other hand, Pandora and other statutory webcasters paid the same rates, any such subsidy, at least with respect to other statutory webcasters, would vanish and Pandora would no longer benefit from a unique cost advantage. An even playing field would allow other statutory webcasters to experiment on equal footing, potentially providing music consumers with other options from which to choose. Moreover, as an economic matter, even what appear to be relatively minor differences in rates are important – when a typical fee is around two-tenths of one cent, even the one-hundredth of a cent difference between the CRB and WAS rates is substantial. A five percent difference in licensing costs, aggregated across a firm's total volume of business can have a significant impact on profitability and means that some statutory webcasters are gaining a financial advantage, and thus a long-run competitive advantage, through this statutory regulation mechanism. As a matter of economic efficiency, across categories of webcasters subject to statutory licensing, fees should be harmonized so as not to unfairly, and economically inefficiently, favor one category of webcaster over another.

109. The differential rate structure not only biases the competitive landscape through the effect on margins and investment, however – it also affects pricing and other dimensions of competition. The price that an interactive webcaster can charge for its service is directly determined by the difference in service attributes between it and its competitors, including non-interactive competitors. To the extent that the webcaster is able to take advantage of lower fees to further improve the quality of its music streams, it gains a competitive advantage over other competitors which face higher licensing costs; as such, these services likely have their prices eroded by competition which is enhanced by unequal licensing rates, creating another channel of revenue lost by music rights holders.

I declare under penalty of perjury that the foregoing testimony is true and correct.

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Appendix 1
PUBLIC VERSION

David Blackburn
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Education

Harvard University
Ph.D., Economics, 2005

Brown University
B.Sc., with Honors, Applied Mathematics and Economics, 1998

Professional Experience

NERA Economic Consulting

2012-	Vice President
2008-2012	Senior Consultant
2005-2008	Consultant

Framingham State College

2003	Instructor - Intermediate Microeconomics

Universidad Nacional de Tucumán, Argentina

Summer 2002	Visiting Professor
	Instructor - Regulation in Network Industries

Written Testimony

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Updated: October 6, 2014

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Charles H. Smith Fellowship in Economics, Harvard University

Referee

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