



**Jeff Bercovici**, Forbes Staff

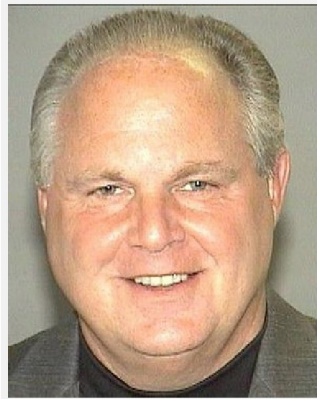
I cover media, technology and the intersection of the two.

BUSINESS | 4/06/2012 @ 3:02PM | 6,115 views

## Karmazin: Rush Limbaugh Should Want to Work for Sirius XM

Here's a tidbit from [my interview with Sirius XM Radio CEO Mel Karmazin](#) that didn't fit into my story about him: I asked Karmazin whether he'd be interested in hiring [Rush Limbaugh](#), should he become available, and he answered in a way that suggests he would.

The recent [advertising boycott](#) against the conservative host has given rise to speculation that Limbaugh might be better off moving to satellite radio after his current contract expires in 2016. Sirius, the only satellite radio operator in the U.S., derives almost all of its revenues from subscriptions, making it more or less immune to pressure from sponsors (although a campaign to get listeners to cancel their subscriptions could have a similar or even worse effect).



(Photo credit: Wikipedia)

When I presented this scenario, Karmazin, in essence, flipped the question, turning it into a pitch to Limbaugh (or any other talent listening) explaining why they should want to work for him. Here's what he said:

“ I think that if I were talent, there is no place I would rather be than satellite radio for a number of reasons. No. 1, we're a national service, whereas if you're Rush Limbaugh you've got to syndicate yourself to 600 different stations to cover the United States. We also aren't running the kind of commercials [they are on terrestrial radio] since our business isn't principally advertising. When we do run a talk show, we run it with fewer commercials.

There's also no [FCC](#) so you really can talk like an adult. You don't have to talk like a child. Terrestrial radio is measured by this indecency standard. They're afraid somebody might say the S-word and a child could hear it, so you can't say it. You have to say "the S-word." We think that adults deserve to be able to hear content for adults.

And, again, we're a very profitable, successful company. If we want a performer, we can afford to pay more than anybody else can because we're making more.

I'm not going to talk about any specific performer, but at this point I can understand why people might think satellite radio is a good place to go.

**This article is available online at:**

<http://www.forbes.com/sites/jeffbercovici/2012/04/06/karmazin-rush-limbaugh-should-want-to-work-for-sirius-xm/>



Chubby Checker  
K-Tel Greatest Hits

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**OVERVIEW**

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**review**

by Tim Se

Thanks to his original '60s recordings on Cameo-Parkway being held hostage by ABKCO, the label that bought the rights, **Chubby Checker** was forced to cut re-recordings of his hits like "The Twist," "Limbo Rock," "Pony Time," and "Let's Twist Again." One could speculate that **Checker** could have made enough money to survive by touring the oldies circuit and might have forgone redoing his songs so that seemingly every budget label on earth could release them. But re-record them he did and almost every **Checker** collection (with the exception of the two on ABKCO from 1972 and 2005) consists of these modern versions. *K-Tel Greatest Hits* from 2005 (which is a retitled reissue of 2002's *All-Time Greatest Hits*) has ten of these versions, including "The Twist," "Limbo Rock," "Pony Time," and "Let's Twist Again," and as far as re-recordings go, they aren't terrible, though **Checker** sounds stiff and the musical backing is more polished than it is on other re-recordings. Basically you're wasting your time and money by picking this set. What you need are the original versions.



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EDITOR RATING ★★☆☆☆

RELEASE DATE November 8, 2005

GENRE R&B  
Pop/Rock

STYLES Rock & Roll

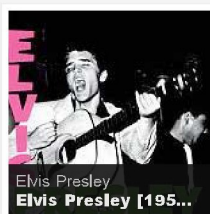
+ Album Metadata IDs

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**tracks**

| Sample | Title/Composer                 | Performer      | Time | Stream            |
|--------|--------------------------------|----------------|------|-------------------|
| ▶      | 1 <b>The Twist</b>             | Chubby Checker | 2:40 | <a href="#">🔊</a> |
| ▶      | 2 <b>Let's Twist Again</b>     | Chubby Checker | 2:23 | <a href="#">🔊</a> |
| ▶      | 3 <b>Pony Time</b>             | Chubby Checker | 2:28 | <a href="#">🔊</a> |
| ▶      | 4 <b>Popeye the Hitchhiker</b> | Chubby Checker | 2:32 | <a href="#">🔊</a> |
| ▶      | 5 <b>Limbo Rock</b>            | Chubby Checker | 2:27 | <a href="#">🔊</a> |
| ▶      | 6 <b>Let's Limbo Some More</b> | Chubby Checker | 2:12 | <a href="#">🔊</a> |
| ▶      | 7 <b>Birdland</b>              | Chubby Checker | 2:30 | <a href="#">🔊</a> |
| ▶      | 8 <b>Loddy Lo</b>              | Chubby Checker | 2:07 | <a href="#">🔊</a> |
| ▶      | 9 <b>Slow Twistin'</b>         | Chubby Checker | 2:46 | <a href="#">🔊</a> |
| ▶      | 10 <b>The Fly</b>              | Chubby Checker | 2:19 | <a href="#">🔊</a> |

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Chubby Checker

# The Very Best of the K-Tel Recordings

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**OVERVIEW**

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**review [-]**

by arwulf a

Anyone interested in **Chubby Checker** might need a bit of guidance because frankly, folks, this guy's discography is like a hall full of mirrors. If you want to hear the original "Twist," find the pleasantly smutty recording made by **Hank Ballard & the Midnighters** in 1958. If you want to hear **Checker's** classic early recordings (several of them containing the word "Twist" in the title), bear in mind that they were made for the Cameo and Parkway labels during the early '60s. If you want those originals you need to look for the words "Cameo" and "Parkway." If they are not in evidence, it is likely that you are up against **Chub's** dreaded K-Tel recordings, which were made during the early '70s when he found himself unable to access his own early catalog, as it had become property of **Allen Klein's** ABKCO Industries in 1968. A 1972 ABKCO/London LP reissue of 16 Cameo-Parkway titles appears to have exploited the singer's reputation while denying him royalties and forcing him to record new renditions of his early hits for K-Tel out of desperation. There's something kind of counterfeit about **Chubby Checker's** K-Tel catalog. To put it bluntly, **Checker** was imitating himself, which is not surprising seeing as his entire career was founded upon a fascinating ability to mimic others, including **Hank Ballard, Fats Domino, Larry Darnell, Jackie Wilson** and **Harry Belafonte**. Sounding rather forced and slickly produced, **Chubby Checker's** K-Tel recordings crop up everywhere like crabgrass, midges or hives. Some budget labels shrewdly "forget" to reveal the K-Tel origin, causing confusion in an already disorderly discography. The K-Tel catalog has been trundled out piecemeal with numbing regularity: Dominion drew upon it for **Chubby Checker's Greatest Hits** in 1987 and **Chubby Checker's Dance Party** in 1991, the same year K-Tel regurgitated another chunk of Greatest Hits, followed by yet another in 1993. K-Tel's 1995 Ultimate Collection delivered "16 All-Time Classics" from that same hackneyed catalog. In 2001, just when the world seemed utterly devoid of K-Tel reissues, the folks at Collectables assembled an unprecedented 20 titles for **The Very Best of the K-Tel Recordings**, including "Hey, Bobba Needle" and "Let's Do the Freddie." Undaunted by this development, K-Tel squeezed out another ten-track **All-Time Greatest Hits** in 2002 followed by an identical issue of the same in 2005. And it was in 2005 that ABKCO finally released **Chubby Checker's** Cameo-Parkway catalog on CD, rendering the entire K-Tel problem a moot issue. If for some reason you really want the longest, juiciest dipstick of all K-Tel reissues, go with the **Very Best** on Collectables.

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**tracks**

| Sample | Title/Composer   | Performer      | Time | Stream            |
|--------|--|----------------|------|-------------------|
| ▶      | 1 <b>The Twist</b><br>Hank Ballard / Hank Ballard, Jr.     | Chubby Checker | 2:35 | <a href="#">🔊</a> |
| ▶      | 2 <b>Let's Twist Again</b><br>Dave Appell / Kal Mann       | Chubby Checker | 2:22 | <a href="#">🔊</a> |
| ▶      | 3 <b>Dancin' Party</b><br>Dave Appell / Barry Mann         | Chubby Checker | 2:24 | <a href="#">🔊</a> |
| ▶      | 4 <b>Slow Twistin'</b><br>Kal Mann                         | Chubby Checker | 2:43 | <a href="#">🔊</a> |
| ▶      | 5 <b>Twist It Up</b><br>Dave Appell / Kal Mann             | Chubby Checker | 3:46 | <a href="#">🔊</a> |
| ▶      | 6 <b>Pony Time</b><br>John Berry / Don Covay               | Chubby Checker | 2:27 | <a href="#">🔊</a> |
| ▶      | 7 <b>Popeye (The Hitchhiker)</b><br>Dave Appell / Kal Mann | Chubby Checker | 2:31 | <a href="#">🔊</a> |

**album moods**

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- Celebratory
- Rollicking
- Amiable/Good-Natured
- Fun
- Summery
- Playful
- Joyous
- Carefree

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|------|---|----------------|------|--|
| ▶ 8  | <b>Limbo Rock</b><br>Jon Sheldon / Billy Strange                              | Chubby Checker | 2:26 |  |
| ▶ 9  | <b>Let's Limbo Some More</b><br>Dave Appell / Kal Mann                        | Chubby Checker | 2:12 |  |
| ▶ 10 | <b>Mary Ann Limbo</b><br>F. Miller & J. Barry / Richard Dehr / Terry Gilkyson | Chubby Checker | 2:48 |  |
| ▶ 11 | <b>Loddy Lo</b><br>Dave Appell / Kal Mann                                     | Chubby Checker | 2:07 |  |
| ▶ 12 | <b>Birdland</b><br>Huey "Piano" Smith / Joe Zawinul                           | Chubby Checker | 2:31 |  |
| ▶ 13 | <b>The Hucklebuck</b><br>Roy Alfred / Andy Gibson                             | Chubby Checker | 2:27 |  |
| ▶ 14 | <b>Dance the Mess Around</b><br>Dave Appell / Barry Mann                      | Chubby Checker | 2:18 |  |
| ▶ 15 | <b>Twenty Miles</b><br>Dave Appell / Barry Mann                               | Chubby Checker | 2:09 |  |
| ▶ 16 | <b>The Fly</b><br>D. Bergen White   | Chubby Checker | 2:21 |  |
| ▶ 17 | <b>Hey, Bobba Needle</b><br>Dave Appell / Kal Mann                            | Chubby Checker | 2:24 |  |
| ▶ 18 | <b>Rosie</b>  | Chubby Checker | 2:28 |  |
| ▶ 19 | <b>Let's Do the Freddie</b><br>Dave Appell                                    | Chubby Checker | 2:23 |  |
| ▶ 20 | <b>Hooka Tooka</b>  | Chubby Checker | 2:11 |  |

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The grid displays 12 album covers in a 3x4 layout. The covers include: 'The Very Best of The Beach Boys: Sounds of Summer...', 'Elvis Presley [195...]', 'The Best of The Spencer Davis Group: Best of the Spence...', 'The Very Best of Gary "U.S." Bonds: NEW OPENINGS + QUARTER TO THREE + SCHOOLBOY OUT', 'The Dave Clark Five: History of the Dav...', 'There's a Riot Goin' On: THE COASTERS ON ATCC', 'The Beatles: 1', 'Little Richard: The Georgia Peach', 'Cannibal & the Headhunters: Land of 1000 Dance...', 'Elvis Presley: Elvis 75: Good Roc...', 'Creedence Clearwater Revival: Chronicle, Vol. 1', and 'Chuck Berry: The Anthology'. Below the grid are four navigation dots, with the first one being red.

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L.A. Guns  
Greatest Hits & Black Beauties

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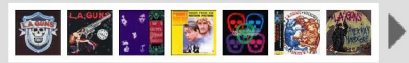
review

by Steve H

Cleopatra's **L.A. Guns** compilation *Greatest Hits and Black Beauties* is really not a hits collection at all, but rather re-recordings of some of the band's best-known songs. There are a few newly written songs and remixes tossed in to entice collectors and completists, but the bottom line is that the consumer is not supposed to realize that these are not the original recordings, as the packaging makes no reference to that fact; what's more, some of the re-recordings find vocalist **Phil Lewis** straining to hit higher notes, sometimes even altering the melodies to compensate for his diminished vocal range. Unless you're a completist, avoid this one; the Hollywood A Go Go best-of is the only real **L.A. Guns** greatest-hits set out there.



DISCOGRAPHY BROWSER



EDITOR RATING **★★☆☆☆**

RELEASE DATE June 1, 1999

DURATION 50:49

GENRE **Pop/Rock**

STYLES **Hair Metal**  
**Hard Rock**  
**Heavy Metal**  
**Pop-Metal**

+ Album Metadata IDs

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tracks

| Sample | Title/Composer   | Performer | Time | Stream                 |
|--------|--|-----------|------|------------------------|
| ▶ 1    | <b>Bricks</b><br>Chrimpsshine  | L.A. Guns | 1:54 | <a href="#">Stream</a> |
| ▶ 2    | <b>One More Reason</b><br>Paul Black / Tracii Guns / Philip Lewis                                | L.A. Guns | 3:21 | <a href="#">Stream</a> |
| ▶ 3    | <b>Ritual</b><br>Mick Cripps / Tracii Guns / P.C. Lewis / Kelly Nickels / Steve Riley            | L.A. Guns | 3:54 | <a href="#">Stream</a> |
| ▶ 4    | <b>Electric Gypsy</b><br>Tracii Guns / Philip Lewis  | L.A. Guns | 3:47 | <a href="#">Stream</a> |
| ▶ 5    | <b>No Mercy</b><br>Nick Alexander / Paul Black / Mick Cripps / Tracii Guns / Philip Lewis        | L.A. Guns | 2:46 | <a href="#">Stream</a> |
| ▶ 6    | <b>Sex Action</b><br>Paul Black / Tracii Guns / Philip Lewis / Steve Riley                       | L.A. Guns | 3:55 | <a href="#">Stream</a> |
| ▶ 7    | <b>Rip and Tear</b><br>Mick Cripps / Tracii Guns / Philip Lewis / Kelly Nickels / Steve Riley    | L.A. Guns | 3:41 | <a href="#">Stream</a> |
| ▶ 8    | <b>Disbelief</b><br>Mick Cripps / Tracii Guns / P.C. Lewis / Kelly Nickels / Steve Riley         | L.A. Guns | 3:04 | <a href="#">Stream</a> |
| ▶ 9    | <b>Ballad of Jayne</b><br>Mick Cripps / Tracii Guns / Philip Lewis / Kelly Nickels / Steve Riley | L.A. Guns | 4:43 | <a href="#">Stream</a> |
| ▶ 10   | <b>Time</b><br>Mick Cripps / Tracii Guns / P.C. Lewis / Kelly Nickels / Steve Riley              | L.A. Guns | 4:47 | <a href="#">Stream</a> |
| ▶ 11   | <b>Heartful of Soul</b>  | L.A. Guns | 2:48 | <a href="#">Stream</a> |
| ▶ 12   | <b>3 Minute Atomic Egg</b>   | L.A. Guns | 3:50 | <a href="#">Stream</a> |
| ▶ 13   | <b>One More Reason</b><br>Paul Black / Tracii Guns / Philip Lewis                                | L.A. Guns | 4:19 | <a href="#">Stream</a> |
| ▶ 14   | <b>Sex Action</b><br>Paul Black / Tracii Guns / Philip Lewis / Steve Riley                       | L.A. Guns | 4:00 | <a href="#">Stream</a> |

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- Outrageous
- Rambunctious
- Rousing
- Rowdy

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Greatest Hits (Us...)

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Vault: Def Leppard...

Bon Jovi  
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Great White  
Greatest Hits

Skid Row  
Forty Seasons: The...

Winger  
Winger

Mötley Crüe  
20th Century Maste...

Mr. Big  
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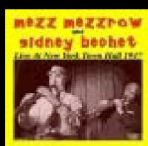
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### Mezz Mezzrow & Sidney Bechet - Live At New York Town Hall 1947

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Mezz Mezzrow is one of Jazz music's most interesting characters, and was responsible for putting together many of the greatest sessions in Jazz history. This concert, recorded January 1st 1947, was put on to celebrate the release of his autobiography, "Really The Blues", and to help with the festivities Mezzrow enlisted many of the greatest purveyors of traditional Jazz the world has ever known. Most notably Sidney Bechet aided the performance with his characteristically amazing soprano sax work, and Muggsy Spanier blew his cornet as good as anyone could ever be expected to! Also featured are the legendary Sammy Price tickling the ivories, long time associate Sandy Williams on trombone, the incomparable Wellman Braud on bass, and the widely influential Baby Dodds finishing off the band on drums. In addition to the main band Mezz was joined by long time friends (and recording artists on Mezz's own King Jazz label) Coot Grant and Kid Wilson who present a very playful version of their own song You Can't Do That To Me.

Although not of the highest audio fidelity, these rare recordings offer a great insight into the New York scene at the time. So sit back and enjoy this rare glimpse into the past, with these Jazz pioneers practicing their craft as only they could.



### Earl "Fatha" Hines - On His Own: Solo Jazz Piano

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This remarkable solo piano session was recorded by Hines the same day as his legendary comeback concert at the Little Theatre in New York March 7th, 1964. It was his first solo recording session since 1956, but Hines was immediately right at home. It's a memorable example of Hines playing some standards, a few of his own compositions, and with all of them doing an exquisite job. This album is Jazz Piano at its best, and is a great addition to any Earl Hines collection.



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### Dizzy Gillespie - Blue And Sentimental

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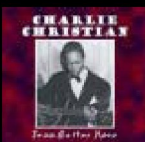
This album contains a selection of recordings made by Dizzy Gillespie in Paris in 1952 and 1953.



### Danny Barker - The Fabulous Banjo Of Danny Barker

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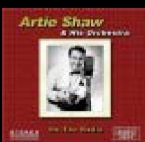
This album features legendary Jazz session musician Danny Barker making his way through 11 Traditional Jazz numbers. One of only two Solo albums ever recorded by Danny, it is sure to be enjoyed by any fan of Traditional New Orleans Jazz. Banjo - Danny Barker, Clarinet - Joseph Muranyi, Piano - Don Frye, Bass - Wellman Braud, Drums - Walter Johnson.



### Charlie Christian - Jazz Guitar Hero

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All Tracks With Unidentified Dates/Personnel Were Recorded Between August 19th, 1939 & June 11th, 1941. Personnel Included: Clarinet - Benny Goodman, Guitar - Charlie Christian, Vibes - Lionel Hampton, Piano - Flether Henderson & Johnny Guarneri, Trumpet - Cootie Williams, Tenor Sax - Georgie Auld, Bass - Artie Bernstein, Drums - Nick Fatool, Harry Jager, & Dave Tough.



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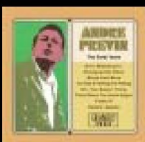
This album Bing Crosby with a special guest appearance by Bob Hope performing many of his most loved songs.



### Coleman Hawkins & His Orchestra - Swingin' At The Savoy 1940

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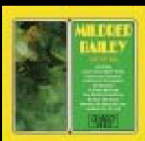
This album features the legendary Sax player Coleman Hawkins leading his own band in concert at the Savoy Ballroom in 1940. Recordings of Hawkins' leading his own band are quite limited, and this gem provides an excellent example of the master at work.



### Andre Previn - The Early Years

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This album features legendary Pianist Andre Previn early in his career. Although still young, his skills as a player are clearly demonstrated on this album as he make shis way through Jazz Piano standards such as Ain't Misbehavin', Honeysuckle Rose, and others. Bass - Leroy Vinnegar, Drums - Shelly Manne.



### Mildred Bailey - All Of Me

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This album features legendary vocalist Mildred Bailey performing many of the biggest Jazz standards of all time including "All Of Me" and 9 others.



### Doc Severinsen - Doc Severinsen & Friends

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This album features legendary trumpet player Doc Severinsen and an All Star Band (Deane Kincaide, Mundell Lowe, Trigger Alpert, and Gus Johnson) performing a series of songs with a Southern Theme with a Jazz twist.



### Teddy Wilson - After You've Gone

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This album features Jazz Piano legend Teddy Wilson backed by an All-Star band (Charlie Shavers Trumpet, Specs Powell Drums, Red Norvo Vibraphone, Remo Palmieri Guitar, And Al Hall Bass) performing many fantastic Standards. This album is sure to be enjoyed by any fan of Wilson or Jazz Piano. Trumpet - Charlie Shavers, Drums - Specs Powell, Vibraphone - Red Norvo, Guitar Remo Palmieri, & Bass - Al Hall.



### Miles Davis - Ornithology

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This album features Miles Davis along with many other Jazz legends (Charlie Parker, Lucky Thompson, Arvin Garrison, Victor McMillan, Tommy Potter, Dodo Mamarosa, Duke Jordan, Max Roach, Roy Porter) performing many of the songs he's known best for.



### Dizzy Gillespie & Charlie Parker - Dizzy Gillespie Featuring Charlie Parker

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### Ella Fitzgerald & Chick Webb - Ella Sings, Chick Swings

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This album features the legendary vocalist Ella Fitzgerald backed up by Chick Webb making their way through amazing renditions of 10 Jazz standards.



### Various Artists - Mardi Gras: Dixieland Jazz Of New Orleans

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This compilation album features a great selection of Dixieland Jazz performed by all it's greatest players. With performances by Louis Armstrong, Sidney Bechet, Kid Ory, Muggsy Spanier, Jimmie Noone, George Lewis, Barney Bigard, and Albert Nicholas, you can't find a better representation of the true Dixieland style!



### Various Artists - Sax Greats

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This album features 10 amazing performances by some of the most legendary Jazz Sax players of all time.



### Pearl Bailey & Louie Bellson - In New York

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This album was recorded in New York in 1955 and features the Husband and Wife team of Louie Bellson and Pearl Bailey at their best. This album includes some of Pearl Baileys signature songs, as well as many great Jazz standards.



### Dizzy Gillespie - All The Things You Are

[ORDER](#)

This album features the legendary Dizzy Gillespie performing 12 fan favorites.

### Django Reinhardt - Jazz Guitar Virtuoso

[ORDER](#)



Django Reinhardt was the first European Jazz musician to influence musicians back in the United States.

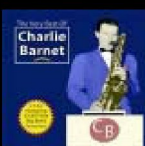
He was born Jan 23, 1910 in Belgium, and grew up in a Gypsy camp near Paris. His Gypsy upbringing was heavily influential on his playing style, which was very unique and groundbreaking. Throughout his life he was constantly breaking new ground, always ahead of the pack. In addition to his huge pre-WWII influence on Jazz guitar he was one of the first musicians to develop Bop Jazz. This album features recordings that were made in 1947 with the reformed Quintette Of The Hot Club Of France. On these recordings Django is playing with a more traditional band, as opposed to the all string group he was playing with before WWII. The difference in instruments found on this record gives a different feel to the music, although it is still distinctly Django.



### The Mills Brothers - Mr. Sandman

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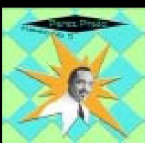
The Mills Brothers career has been one of the longest in the history of popular music. They had become a successful live and radio act by the late 20s, scored their first hit in 1931, and were still actively performing with 3 of the 4 original brothers into the 1980s. This album features The Mills Brothers with John, Sr. performing many of their best songs including their hits You Always Hurt The One You Love & Glow Worm as well as their amazing rendition of the classic Mr. Sandman.



### Charlie Barnet - The Very Best Of Charlie Barnet

[ORDER](#)

On this 2 disc album, Charlie Barnet is at his best. These recordings feature some of the most noted studio performances of his biggest hits. Charlie Barnet was born on Oct.26, 1913, in New York, NY and died on Sept. 4, 1991, in San Diego, CA. His main instrument was the Tenor Sax and his playing was greatly influenced by Coleman Hawkins. He also played Alto Sax and his style was based on that of Johnny Hodges. Charlie Barnett was also, along with the great Sidney Bechet, one of the few of that period (the 30 s and 40 s) to play the Soprano Sax. Charlie Barnet was born into a wealthy family and, although his parents preferred that he become a lawyer, was a professional musician by the age of sixteen. Arriving in New York in 1932, he began recording as a bandleader a year later. His 1939 recording of Cherokee was a big hit and he became quite famous. His career was at its apex from 1939 1949. After disbanding his regular group in 1949, which included a great Trumpet section consisting of Maynard Ferguson, Doc Severinsen, Ray Wetzel, and Rolf Ericson, Charlie Barnet continued to tour occasionally.



### Perez Prado - Mambo No. 5

[ORDER](#)

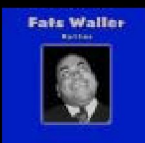
Perez Prado was the most important figure in the Latin dance craze of the 1950s. He is known as the King of the Mambo, and for good reason. He is best known for the songs "Mambo No. 5", "Patricia", and "Cherry Pink and Apple Blossom White", all of which are included on this album. His legendary stage presence was second to none and his fiery persona carried over to his studio recordings. Other hot Latin dance tracks featured on this album show him at the top of his game.



### Glenn Miller - The War Years

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This album features rare World War II performances by Glenn Miller.



### Fats Waller - Rarities

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This unique collection was compiled from hard to find 78 RPM records, V-discs, and rare live performances, some of which have never been issued on compact disc until now. A must have for any collector!



### Jimmie Lunceford & His Big Band - The Swinging Sounds Of

[ORDER](#)

This album features Big Band Legend Jimmie Lunceford making his way through 10 classic swing numbers, with vocals by Dan Grissom.

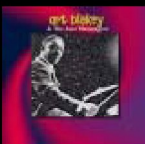




### George Gershwin - Piano Rolls

ORDER

This album features rare Piano Roll recordings of George Gershwin playing his own masterpieces. A must have for any fan of Gershwin's music!



### Art Blakey - Art Blakey & The Jazz Messengers

ORDER

On this album virtuoso Jazz drummer Art Blakey leads the Jazz Messengers through a blazing, thirteen minute long rendition of the song "New World" and other outstanding cuts showing the bands dynamic range and diversity. A truly remarkable Jazz album!



### Jo Jones - Jo Jones Featuring Harry "Sweets" Edison

ORDER

These remarkable recordings combine the masterful drumming of Jo Jones with the colorful trumpet playing of Harry "sweets" Edison, making for a wonderful combination and a delightful jazz album!



### Erroll Garner - At The Piano

ORDER

This is a remarkable Jazz Piano album with ten standards serving as the platform for showcasing the incredible talent of Erroll Garner. An enjoyable Jazz listening experience.



### Django Reinhardt - Performs His Own Compositions

ORDER

Django Reinhardt was considered by many to be the greatest jazz guitar player who ever lived. In these rare performances, Django makes his way through eleven of his own compositions with the help of Stephane Grappelli and the Quintette of the Hot Club of France. This album is a must have for any serious Jazz collector!



### Django Reinhardt - Featuring Stephane Grappelli

ORDER

Django Reinhardt was considered by many to be the greatest jazz guitar player who ever lived. In these rare performances, Django makes his way through eleven compositions with the help of Stephane Grappelli and the Quintette of the Hot Club of France. This album is a must have for any serious Jazz collector!



### Dizzy Gillespie - Featuring Charlie Christian

ORDER

On these remarkable and previously hard to find recordings Dizzy is accompanied by the legendary Charley Christian on guitar, and Thelonious Monk on piano. This album is a must have for any serious Jazz collector!



### Sidney Bechet - Breathless Blues

ORDER

Sidney Bechet is still thought by many jazz aficionados to be one of the best soprano sax players who ever lived. He began playing in New Orleans Storyville Quarter and like Louis Armstrong he was a master of the New Orleans style. On this album Bechet's virtuosity is apparent. A wonderful collection from a jazz master!



### Meade Lux Lewis - Barrel House Piano

ORDER

Meade Lux Lewis will forever be remembered as a pioneer of the "Honky Tonk" and "Boogie Woogie" piano style. This unique album of piano bar favorites is a wonderful listening experience and a splendid example of the truly American saloon style music which was heard across the country from the turn of the century and on up into the '30s

and early '40s.



### Various Artists - Big Bands Of The Swinging Years

ORDER

favorites.

Featured here in one collection are some of the greatest big band leaders and vocalists that ever hit the stage and shaped the sound of an era! Including: Ella Fitzgerald, Billie Holiday, Count Basie, Duke Ellington, Benny Goodman and many others. In addition to the above this album contains many rare and previously hard to find performances of songs such as Lover Man, That Old Black Magic, One O'Clock Jump and many other all time big band



### Bing Crosby - Duets

ORDER

On this delightful album Bing Crosby croons his way through twelve all time favorite songs with the help of some of the greatest entertainers of the era, including Judy Garland, Peggy Lee, Patti Page and many others!



### Muggsy Spanier & Earl "Fatha" Hines - Featuring Earl "Fatha" Hines

ORDER

This album features Jazz Legends Muggsy Spanier and Earl "Fatha" Hines performing many classic early Jazz standards. Recorded in the 1950s this album features superior sound quality to many of the pre-war recordings by the same artists.



### Count Basie & Billie Holiday - At The Savoy Ballroom

ORDER

This album contains nearly impossible to find cuts previously unissued on Compact Disc and featuring the incomparable Billie Holiday! Billie Holiday was only with the Count Basie Orchestra for a short time, and these represent the only recordings of the 2 legendary Jazz artists performing together. These tracks remained almost unheard for many decades and until now have only been available on vinyl. Recorded at the Savoy Ballroom Count Basie and Billie Holiday give a sizzling performance of "Swing Brother Swing" and a soulful and heart rendering rendition of "Lover Man". Also Included is a vocal appearance by James Rushing. These Recordings though sometimes rough due the limitations of early recording technology are being presented here due to their historical significance, some surface noise may appear. Announcer - Howard Doyle, Piano - Count Basie, Vocals - Jimmy Rushing, Billie Holiday, Trumpet - Buck Clayton, Ed Lewis, Bobby Moore, Trombone - George Hunt & Dan Minor, Alto Sax - Earl Warren, Alto & Baritone Sax - Jack Washington, Tenor Sax & Clarinet - Lester Young, Tenor Sax - Herschel Evans, Guitar - Freddy Green, Bass - Walter Page, Drums - Jo Jones. Recorded June 30th, 1937.



### Jean-Luc Ponty, Stephane Grappelli, & Stuff Smith - Art Of The Jazz Violin

ORDER

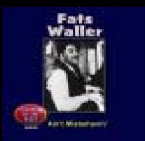
This album features three of the most outstanding musicians who turned the violin from classical use to Jazz. Stephane Grappelli was one of the original members of the famed Django Reinhardt Hot Club of France and worked all over Europe playing the top Jazz festivals. Stuff Smith, who became one of the heroes of the swing era, was one of the first to play an amplified violin and landed many Jazz awards. Jean-Luc Ponty has taken up the mantle from Grappelli and Smith, and his outstanding virtuosity in his early days can be heard on these recordings.



### Louis Armstrong, King Oliver, & Bessie Smith - Mostly Blues

ORDER

This album features Louis Armstrong and King Oliver with a special guest vocal by the incomparable Bessie Smith. These recordings present a fantastic roots of Jazz listening experience for any connoisseur of Early Jazz.



### Fats Waller - Ain't Misbehaving

ORDER

This album includes many of the legendary Fats Waller's classic songs including a rarely heard alternate version of Ain't Misbehavin' and several outtakes. A must have album for fans of Harlem Jazz piano in the thirties.



### Charlie Barnet & His Orchestra - The Best Of Charlie Barnet

[ORDER](#)

With the elegant sax work of Charlie Barnet leading the way, this album takes you from the swinging sounds of Big Band standards like "Take The 'A' Train", to the sultry film noir landscape of the orchestra's rendition of "Harlem Nocturne". All of this album's selections were recorded in the late 50s in Stereo with the best sidemen in the business, giving this album superior sound to many of the older 30s and 40s recordings, and makes for a truly wonderful listening experience! Tracks 1-4 were recorded on August 5th & 6th 1958 in New York. Trumpets: Charlie Shavers, Irving Markowitz, Clark Terry, Al Stewart. Jimmy Nottingham replaces Charlie Shavers on tracks 1 & 3 Trombones: Billy Byers, Frank Saracco, Bobby Byrnes & Erwin Price Reeds: Charlie Barnet, sax; Danny Bank, baritone; Dick Hafer, tenor; Kurt Bloom, tenor; Vinnie Dee, alto; Pete Mondello, alto, tenor & baritone Rhythm: Chubby Jackson, bass; Nat Pierce, piano; Terry Snyder, drums, Bunny Briggs, vocals. Don Lamond replaces Terry Snyder on tracks 1 & 3 Arrangers: Bill Holman, Billy Moore, Andy Gibson. Tracks 5-8 were recorded on September 3rd & 4th 1958 in New York, Trumpets: John Bello, Doc Severinsen, Dick Sherman, Charlie Shavers Trombones: Billy Byers, Frank Rehak, Chauncey Welsh, Reeds: Charlie Barnet, alto & soprano; Phil Woods, alto; Dick Melodonian, alto & tenor; Dick Hafer, tenor; Kurt Bloom, tenor; Danny Bank, baritone, Rhythm: Nat Pierce, piano; Barry Balbraith, guitar; Milt Hinton, bass; Don Lamond, drums. George Duvivier replaces Milt Hinton on tracks 7 & 8. Arranger: Bill Holman. Tracks 9 & 10 were recorded on September 29th in New York, Trumpets: John Bello, Jimmy Maxwell, Al Derisi, Charlie Shavers, Trombones: Bill Byers, Frank Rehak, Chauncey Welsh, Reeds: Phil Woods, alto; Dick Melodonian, alto & baritone; Dick Hafer, tenor; Kurt Bloom, tenor; Danny Bank, baritone, Rhythm: Nat Pierce, piano; Barry Galbraith, guitar; Wendell Marshall, bass; Don Lamond, drums, Arranger: Bill Holman.



### Memphis Slim - Three Women Blues

[ORDER](#)

Memphis Slim is known as one of the greatest blues piano players of all time, and for good reason. On this album he cuts loose with some of his best known numbers, adding powerful vocals to complete the hard driving piano bar feeling he's so well known for.



### Jelly Roll Morton - The Jazz Age Volume 5

[ORDER](#)

Original Piano Roll Recordings from The 1920's! Created between 1924 & 1926 they showcase the amazing playing of one of Jazz Piano's earliest pioneers.



### Fletcher Henderson - The Jazz Age Volume 1: Harlem in the Thirties

[ORDER](#)

Fletcher Henderson enjoyed tremendous popularity in the 1920's and 1930's "Red Hot Jazz" scene, and was an early pioneer of the swing music era that was to follow. The album presented here is a wonderful sampling of Harlem in the 30's according to Fletcher Henderson, capturing all the flavor and decadence of the "Jazz Age" with its speakeasy's fast cars and hot music.



### Luckey Roberts - The Jazz Age Volume 2: Happy Go Lucky

[ORDER](#)

Luckey Roberts was a virtuoso Ragtime and stride pianist contributing much to the Jazz and Blues piano styles of his day. On the recordings featured here Lucky elegantly makes his way through many of the Jazz age standards of the 20's and 30's including Ballin' the Jack, Anything Goes, Sweet Georgia Brown and other favorites.



### Jimmie Noone, Kid Ory, & Louis Armstrong - The Jazz Age Volume 3: New Orleans Jazz

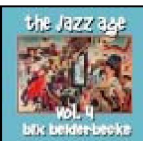
[ORDER](#)

This album features Jimmy Noon and Kid Ory as they masterfully play their way through ten red hot New Orleans classics with a special guest vocal appearance by Louis Armstrong on the classic "When The Saints Go Marchin' In"!

### Bix Beiderbecke - The Jazz Age Volume 4

[ORDER](#)

Leon "Bix" Beiderbecke was truly one of the greatest Jazz cornet players of his day. Legend has it that he



drank as hard as he played, in speakeasies selling low quality prohibition liquor, and hence died at an early age. The music contained in these recordings, although sometimes rough due to the recording technology of the time, reflects the true flavor of the "Roaring Twenties" Jazz scene. Just listening to these recordings brings to mind visions of flappers, bootleggers, and gangsters and propels the listener back in time to the Jazz Age in all its excess and glory!



### Django Reinhardt - The Jazz Age Volume 6

ORDER

Django Reinhardt was considered by many to be the greatest jazz guitar player who ever lived. This album contains rare Django at his best.



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Before the  
COPYRIGHT ROYALTY BOARD

|  |   |                            |
|--|---|----------------------------|
| In the Matter of                       | ) |                            |
|  | ) |                            |
| ADJUSTMENT OF RATES AND TERMS FOR      | ) | Docket No. 2006-1 CRB DSTR |
| PREEXISTING SUBSCRIPTION SERVICES,     | ) |                            |
| AND                                    | ) |                            |
| SATELLITE DIGITAL AUDIO RADIO SERVICES | ) |                            |
|  | ) |                            |
|  | ) |                            |
|  | ) |                            |

TESTIMONY OF DAVID J. DEL BECCARO

My name is David J. Del Beccaro and I am the President and CEO of Music Choice. I have overseen all aspects of Music Choice since the company's inception in 1987. I submit this testimony in connection with the above-captioned proceeding, in which the Copyright Royalty Board ("CRB") will adjust the rates for the statutory license used by Music Choice for the public performance of sound recordings as a pre-existing subscription service pursuant to 17 U.S.C. § 114(f)(1).

**My Background**

I helped commercialize Music Choice (formerly named Digital Cable Radio Associates) beginning in 1987, when I served as Vice President, Business Development for Jerrold Communications ("Jerrold"), a division of General Instrument Corporation ("GI"). After approximately 4 years of product development and market testing within Jerrold, I helped secure financing for the digital music service concept through a partnership of major cable and music companies, beginning in 1991 when the company launched as a stand-alone entity. Between 1991 and 2000, a number of major companies became investors in the venture through various



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predecessors and affiliates. Those companies are now: Comcast Corporation; Cox Communications, Inc.; EMI Music, Inc.; Motorola, Inc.; Microsoft Corporation; Sony Corporation of America; and Time Warner Inc. In my capacity as President and CEO of Music Choice over the past 15 years, I have devised, implemented and overseen various changes in the company's services and technologies, as the company has had to adapt to an increasingly difficult and competitive market for music delivery. In this time, I have become intimately familiar with various facets of the music industry, including the production and promotion of sound recordings, artist promotion, and the many forms of broadcasting and music delivery. I have been quoted in The New York Times, Associated Press, Reuters, MultiChannel News and Billboard, among other national publications on various topics related to music and technology. A list of my recent speaking engagements on these topics is submitted as Exhibit MC 1.

Prior to holding my current position, I served as the Vice President of New Business Development at Jerrold, as noted above. Before joining Jerrold, I held various marketing and financial positions at GI and Ford Motor Company. I have B.S. and M.S. degrees in Industrial Engineering from Stanford University and a B.A. in Management Engineering from Claremont McKenna College.

I am familiar with the operations of Music Choice and with its relationships with copyright owners and their representatives, including the American Society of Composers, Authors and Publishers, ("ASCAP"), Broadcast Music, Inc. ("BMI"), SESAC, Inc. ("SESAC"), the Recording Industry Association of America ("RIAA"), SoundExchange and other licensing entities. As part of my responsibilities as President and CEO of Music Choice, I also keep myself generally apprised of the copyright costs faced by similar businesses in the United States and other countries. The following testimony is based upon my personal knowledge and



information available to me in the course of performing my duties as President and CEO of Music Choice.

### **The Music Choice Service**

Music Choice's residential service that is the subject of this proceeding is a music service comprised of 53 channels of diverse audio programming. Each channel provides a distinct musical genre or sub-genre to the listener. Our service is delivered to customers primarily by cable operators as part of a package of offerings to customers in the home (e.g., the Music Choice service is included by cable operators as part of their digital basic cable service to their customers). Most customers receive between 47 and 52 of our channels through our residential service. Our programming currently reaches over 31 million residential customers across the United States.

Music Choice provides services to residential customers under the statutory license for the public performance of sound recordings by a "pre-existing subscription service" ("PES"), as that term is defined in Section 114(j)(11) of the Copyright Act. We fully comply with the sound recording performance complement, as required by the statutory license. Accordingly, we do not play more than three different selections of sound recordings from any one phonorecord within a three hour period on any of our channels. We do not consecutively play more than four sound recordings by the same artist or from a compilation set of phonorecords within a three hour period on any of our channels. We do not pre-announce our play list. We make regular reports of our programming, and regularly remit the required license fees to SoundExchange. Since the statutory license was enacted in 1995, Music Choice has paid the record labels [REDACTED] in royalties.

### Summary

As a PES, the Music Choice residential audio service is subject to a special standard under Sections 114(f)(1) and 801(b)(1) of the Copyright Act. This standard was designed to protect the business expectancies of services that were making digital performances of sound recordings prior to 1995, when the limited digital performance right for sound recordings first came into existence, and 1998, when the rate standards for certain statutory licenses were modified for other services. Consequently, PES status was granted only to three companies doing business at the time: Music Choice, DMX and Muzak. Unlike most other statutory licenses for the sound recording digital performance right, the PES license standard provides for a “reasonable royalty” that is set as a below-market rate. According to the statute, the reasonable royalty rate is set based upon evaluation of the following policy objectives:

- (A) To maximize the availability of creative works to the public.
- (B) To afford the copyright owner a fair return for his or her creative work and the copyright user a fair income under existing economic conditions.
- (C) To reflect the relative roles of the copyright owner and the copyright user with respect to relative creative contribution, technological contribution, capital investment, cost, risk, and contribution to the opening of new markets for creative expression and media for their communication.
- (D) To minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.

17 U.S.C. § 801(b)(1).

During the first rate-setting proceeding for pre-existing subscription services, commenced in 1996, the Copyright Arbitration Royalty Panel (“CARP”) initially set the royalty rate at 5 percent of gross domestic revenue from the licensed residential service. On appeal, in 1998, the Librarian of Congress adjusted the rate to 6.5 percent. That original royalty rate has not been

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reevaluated through the CARP (now the CRB) process since that time. The first time the rate was subject to adjustment, Music Choice settled with SoundExchange solely to avoid the prohibitive costs associated with the CARP process. This time, settlement was not possible, as SoundExchange refused even to propose a negotiated settlement rate.

Music Choice proposes a sound recording performance license rate for our preexisting subscription service of 2.6 percent of service revenues. The original 6.5 percent rate was the product not only of a full CARP but also two levels of appeal. While the standard and method for setting the rate by the Librarian of Congress in that proceeding was upheld by the District of Columbia Circuit and remains applicable to this proceeding, the Librarian specifically noted that changed factual circumstances considered by that standard might justify adjusting the rate in future proceedings. Ten years later, every relevant change in circumstance indicates that the royalty rate should be lowered.

First, the Librarian correctly used the sum of the services' license rates for the digital performance of the underlying musical compositions paid to ASCAP, BMI and SESAC to establish the highest possible marketplace benchmark rate for the equivalent digital sound recording performance license. The Librarian relied upon the CARP's estimate of ■ percent of revenues as the sum of the composition performance licenses. That figure was estimated because certain of the licenses were in a period of negotiation and had not been finally set. As it turned out, the CARP's estimate was too high. In fact, the sum of Music Choice's current license fees paid to ASCAP, BMI and SESAC is ■ of the estimate upon which the original rate was based. This change in circumstance alone warrants a significant reduction in the sound recording performance rate.

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Next, the Librarian considered the various evidence relevant to the mandated policy objectives contained in the statute, including our licenses with Warner, Sony and EMI, and used those considerations to set the reasonable royalty rate at 6.5 percent, ██████ of the aggregate musical composition rate. Changes in circumstances during the intervening ten years, however, have only strengthened Music Choice's case under each of the policy factors. Consequently, the rate should be adjusted to less than ██████ of the composition performance benchmark.

Ten years later, the evidence of the benefits to the record labels from the Music Choice service is even stronger than it was at the time of the original CARP. Our service drives record sales, particularly in genres where the labels most need the help. The record labels themselves have repeatedly acknowledged these key facts. Moreover, it is now clear that Music Choice promotes artists who are not promoted by terrestrial radio and are therefore at the greatest risk of losing their recording contracts. Our promotion of these artists therefore leads to the creation of more music.

Music Choice continues to invest in technology and improvements to the Music Choice service, particularly in improvements like on-screen display of promotional graphics and information about the sound recording, which have increased the promotional value of our service to the record labels. Since the first CARP it has become increasingly clear that Music Choice provides numerous acknowledged benefits, at no additional risk, to the record labels and artists.

At the same time, Music Choice's residential business has not been stable or profitable on a cumulative basis, and shows no prospect for significant additional growth. While the business has grown since 1996 in terms of overall revenue and subscribers and has finally generated a modest profit on an annual basis, the business is still basically flat. Fifteen years after launch,

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the residential service is a mature business, with no new expectation or avenue for growth. Various market forces have driven the average fee per customer paid to Music Choice down from [REDACTED] at the time of the first CARP to [REDACTED] today. Of the three original pre-existing subscription services, Music Choice is the only significant service left. DMX declared bankruptcy and sold off its assets last year. Muzak's revenues from its residential service are apparently so inconsequential that it is not actively participating in this proceeding. Indeed, Muzak is only carried on the same single residential outlet – Echostar/DISH CD – as it was in 1996. Consolidation in the cable industry has increased the leverage of our cable affiliates in contract negotiations. At the same time, we are subject to increasing competition from much larger companies like XM, Sirius, and MTV, which further reduces our negotiating leverage.

Our attempts over the years to increase our profitability through advertising revenue and other initiatives have failed. To maintain its viability as a business, Music Choice has been developing an on-demand music video service for our cable affiliates, which is not covered by the statutory license and presents its own challenges. After 15 years as a stand-alone company, Music Choice is still not profitable on a cumulative basis and still has not returned the initial capital investment of its investors. Music Choice has been burdened with the existing rate, and if that rate is left in place, Music Choice may never be able to return our investors' capital.

Finally, it is clear that reducing the royalty rate will minimize the disruptive impact on the industries involved. Music Choice is still a very small company, both in size and in revenues. As indicated above, lowering the royalty rate will help Music Choice withstand the various market pressures it is experiencing. Any resulting reduction in revenues to the record labels (which would still provide more revenue than if Music Choice were forced to discontinue its service), would represent a tiny fraction of the labels' overall revenues and would not even be

felt by that industry. Notably, the record labels do not incur any additional costs in connection with the Music Choice service. Every penny paid to them is pure profit, generated at significant cost and risk to Music Choice.

After consideration of the marketplace benchmark provided by Music Choice's musical composition performance licenses, the sound recording performance licenses between Music Choice and three of the major record labels, and the statutory policy objectives, the sound recording performance license rate for Music Choice should be reduced to 2.6 percent. Because the ephemeral copies made by Music Choice have no independent economic value and recent agreements covering the ephemeral right have folded the ephemeral copy license into the performance fee, the Section 112 ephemeral license should be included within the 2.6 percent royalty rate. If any additional value is ascribed to the ephemeral license, that value should be set no higher than 4 percent of the performance license rate.

**I. Marketplace Benchmarks For The Digital Performance Right**

For the first several years of Music Choice's existence, there was no performance right for sound recordings. Historically this was due to the judgment of Congress that the public performance of sound recordings served to promote record sales. This judgment makes sense, because customers usually buy recordings that they like. They usually do not know whether they like a recording until they hear it. Nonetheless, the record labels repeatedly lobbied Congress to create a public performance right for sound recordings, without success.

In 1995, amid the rising popularity of the Internet and other new digital modes of delivering data and music performances, the record labels persuaded Congress that certain digital performances had a unique potential to displace record sales. In particular, the labels argued that performances made in a digital medium were more likely to displace record sales than analog



performances (such as those on terrestrial radio), warranting the creation of a narrow performance right for the digital performance of sound recordings.

Nonetheless, in recognition that Music Choice and other PES operators had invested significant capital in building businesses with the expectation that there would be no performance royalty due for sound recordings, Congress created a statutory license. Rather than institute a market-based, willing buyer / willing seller standard to set the rate for that license, a lower-than-market rate was instituted, as I discussed above.

**A. Music Choice's Licenses With Record Labels**

In 1993 and 1994, prior to the creation of the digital performance right, certain of the major record labels, namely Warner Music Group, Sony Music and EMI Music, invested in Music Choice. In connection with that investment, and for the purpose of establishing that there was a recognized value to the performance of sound recordings, the record labels insisted that Music Choice agree to pay those labels a license fee for performing their sound recordings. The royalty rate was █ percent of revenue, adjusted for the percentage of each record company's music played on the Music Choice service so that █ percent would cover the entire record industry. Copies of these licenses are submitted as Exhibits MC 2 – MC 4. Although these royalty payments were agreed to before there was an independent obligation to pay for the performance of sound recordings, I believe based upon my experience negotiating these deals that the █ percent rate (allocated among the whole record industry) represented the value the record labels hoped to place on the sound recording performance right.

**B. Music Choice's Composition Performance Licenses**

The Librarian set the highest possible marketplace benchmark rate as the sum of all three blanket licenses from ASCAP, BMI and SESAC for the performance of the musical compositions. Although those licenses covered a different (but related) copyrighted work, the

underlying musical composition performed in the sound recording, the Librarian used the composition performance licenses as the benchmark because they covered the exact same service and extrinsic evidence indicated that the marketplace value for the composition right was equivalent to or greater than the value of the sound recording right in analogous scenarios.

Based upon my knowledge and experience in the music industry, and my research and inquiries into the licensing practices of other copyright users, I still believe that where both the sound recording right and composition right are licensed, the fee for those licenses is equal or the composition right is slightly higher. In the first CARP proceeding, Music Choice introduced a study conducted on behalf of Music Choice Europe (“MCE”), an affiliated company at that time, which provides a very similar service to ours in Europe. The study was conducted for the purpose of allowing MCE to negotiate its performance licenses in Europe, where there already was a sound recording performance right. A copy of that study is submitted as Exhibit MC 5. That study shows that the average royalty paid for the sound recording performance right is equal to or less than the royalty paid for the composition performance right.

In 2002, as we were preparing for the CARP proceeding that ultimately settled, we again contacted MCE and to our understanding the respective rates actually being paid across Europe by MCE for the sound recording performance right were roughly equal to the royalty rates paid for the composition right. In the United Kingdom, the performance license rates charged to terrestrial radio for musical compositions and sound recordings are administered by The Performing Rights Society (“PRS”) and Phonographic Performance Limited (“PPL”), respectively. The websites for PRS and PPL indicate that the current license rate for the musical composition performance are slightly higher than the rate for the sound recording performance. A printout of those rates from the PRS and PPL websites is submitted as Exhibit MC 6.

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I do not believe that these facts about licensing in Europe necessarily determine what the specific market rate in the United States would be for the sound recording right. These facts do, however, demonstrate that when both rights are licensed for the same performance, the value attributed to the performance of the sound recordings, relative to the value attributed to the performance of the underlying musical compositions, is equal or less.

I am also aware that in the first CARP proceeding to determine the statutory license rates for webcasters and in the currently-pending CRB proceeding to adjust those rates, various testimony and evidence was introduced supporting the fact that, when licensed for the same product or service, the sound performance right is valued no higher than the composition right. That prior testimony is submitted by Music Choice as part of its direct case. The equivalence of the sound recording and musical composition performance rates is further supported by the testimony of George Strong, submitted by Music Choice as part of its direct case.

Because there have not been any other comparable marketplace licenses negotiated since the first PES CARP, the musical composition blanket licenses paid to ASCAP, BMI and SESAC remain the best benchmark of the highest possible marketplace rate. The relevance of the composition licenses was previously determined by the Librarian of Congress and affirmed by the District of Columbia Circuit. However, the Librarian had to rely upon the CARP's estimate of that aggregate rate because Music Choice had interim licenses with ASCAP and BMI at the time. Those rates were not final, and were therefore subject to change. The Librarian used the CARP's estimate of the aggregate musical composition performance license fees, ■ percent of gross revenue, as the highest point in the benchmark range of possible reasonable rates. The actual rates now paid by Music Choice to ASCAP, BMI and SESAC, however, are much lower than the estimate used by the Librarian. Music Choice pays ■■■■■ to ASCAP and

BMI, and pays [REDACTED] to SESAC. [REDACTED]

[REDACTED]

[REDACTED]

Copies of Music Choice's current licenses with these performing rights organizations are submitted as Exhibits MC 7- 9. Consequently, [REDACTED] [REDACTED], our effective aggregate rate for the public performance of musical compositions is actually [REDACTED] percent. [REDACTED] percent should therefore be the highest point in the range of possible benchmark rates.

**C. There Have Been No Other Comparable Benchmarks**

Since the implementation of the statutory royalty, there have not been any negotiated licenses covering the sound recording digital performance right for a service comparable to Music Choice. Consequently, the composition performance rate and the negotiated licenses between Music Choice and the three major record labels remain the only viable benchmarks. SoundExchange may argue that the settlement rate agreed to by Music Choice in 2003 or the statutory rate set for webcasters provide possible benchmarks, but they do not.

1. The 2003 settlement is not a valid benchmark

In January 2003, rather than proceed with another expensive CARP proceeding, which would easily have cost Music Choice millions of dollars, Music Choice agreed to increase the 6.5 percent rate to 7 percent for 2002-2003 and 7.25 percent for 2004 through 2007. This increase was in no way indicative of any of the statutory policy objectives relevant to this proceeding, nor was it a true marketplace transaction. Although it was already clear that the original royalty rate was set too high, Music Choice could simply not, from a business perspective, justify the expense in money and staff resources of another proceeding so soon after the conclusion of the appeal process of the first proceeding. [REDACTED]

[REDACTED]  
[REDACTED]. In

addition to the costs noted above, these proceedings consume an enormous amount of my and my staff's time. A small company such as ours cannot afford to undertake these expensive proceedings with each copyright holder each time a renewal or rate adjustment is required.

2. The subscription webcaster rate is not a valid benchmark

Pursuant to another settlement under threat of immense litigation expense, subscription webcasters and other new subscription services settled on a royalty structure with three options for calculating the fee. A copy of the notice published in the Federal Register, announcing the rate set by the settlement, is submitted as Exhibit MC 10. The first two options were a per-performance option and an aggregate-tuning-hour option. Neither of these other two options could possibly apply to Music Choice, because they both require a service to know how many customers hear each song. We have no way of knowing which of our customers is listening to a particular channel at a given time. Consequently, the per-performance rate and the aggregate-tuning-hour rate cannot possibly provide a valid benchmark for our service.

The third option was a percentage of revenue option, with a rate of 10.9 percent and a minimum payment of 27 cents per subscriber per month. This cannot provide a valid benchmark for several reasons. Similarly to our 2003 settlement, this rate was not the product of a true marketplace negotiation, nor was it devised with consideration of any of the statutory policy objectives applicable to a PES. Instead, it was a rate driven primarily by the threat of expensive litigation. This expense could easily be borne by the industry trade association for the record labels, the RIAA, whose sole "business" is lobbying and litigation.

Another reason the webcaster rate does not provide a valid benchmark is that the webcasting service and business model are different from Music Choice's in material ways. One

obvious difference is that Music Choice provides its service through intermediaries, such as cable operators, and is usually packaged with other programming services in a bundled offering. This dependency on intermediaries carries the significant risk of losing carriage, a risk that is not priced into the webcasting model. Because we do not provide our service directly to consumers, we also do not collect subscription fees from the customer – we are paid license fees by the our distributors. In addition, the webcasting business model is largely dependent on advertising revenues, even for the subscription services. We have virtually no advertising revenue, and only a fixed license fee revenue stream. Another material difference between Music Choice and the webcasters is that we must compete directly with other cable television offerings for the cable subscriber's attention.

The webcasting industry is still in a relatively undeveloped state, with enormous potential for growth. Music Choice has been operating its service for over 15 years now, and has seen its revenue per customer shrink to [REDACTED]. It is a fully mature business, with no possibility of untapped upside. Unlike webcasters', Music Choice's business model could never include taking a loss in the short term to build volume through market share. We already have achieved full market share and our prices are dropping, not rising.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**II. Downward Adjustment In Consideration Of The Statutory Policies**

The Librarian recognized that the reasonable rate provided by the statutory license was not the same as a marketplace rate. The District of Columbia Circuit affirmed on this point,

holding that a reasonable rate under this license need not be within the range of market rates. Indeed, the District of Columbia Circuit held that a reasonable rate, taking into account the statutory policy objectives, would generally be less than the market rate, and did not even have to take a market rate into consideration, as long as the rate furthered the statutory policy objectives. A reasonable rate could not be higher than a market rate, however. Taking the policy objectives into account, and also considering [REDACTED] licenses struck by Music Choice with the record labels, the Librarian set the reasonable rate at [REDACTED] percent of the highest possible point in the range delimited by the composition performance licenses [REDACTED], or 6.5 percent of revenues. Even if changes in circumstance had not strengthened Music Choice's case for a lower rate under the statutory policies, the use of actual data instead of an estimate for Music Choice's composition performance licenses, alone, justifies a change in the rate from 6.5 percent to [REDACTED]. Circumstances *have* changed, however, and in ways that warrant a further reduction of the statutory license rate to a maximum of [REDACTED] [REDACTED], or 2.6 percent of gross revenues, [REDACTED] [REDACTED]. This rate is further supported by the testimony of George Strong, submitted as part of Music Choice's written direct case. I will address each of the statutory policy objectives in turn.

**A. To Maximize The Availability Of Creative Works To The Public**

Music Choice maximizes the availability of creative works to the public in a number of ways, and to a much greater degree than it did at the time of the first CARP. First, Music Choice invests a significant amount of energy and expense in creating its channels. Each of these channels is programmed in a creative manner calculated to appeal to listeners. Each day of programming involves creative choices in the selection and ordering of many individual songs.

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The programs created by Music Choice constitute creative works in their own right. We have greatly increased the size and depth of our programming staff, from 16 in 1996 to 34 today.

Each channel also includes original on-screen content created by Music Choice, including not only promotional information designed to promote sales of the recordings, but also creative visuals and graphics, designed to stimulate customers to look at the screen, all to the benefit of the record labels. Surveys have shown that our customers frequently view the promotional information displayed on the television screen during play and also specifically that our customers purchase music after hearing it on Music Choice. These survey results are submitted as Exhibits MC 11-12. Examples of Music Choice's on-screen layouts are submitted as Exhibit MC 13. Since the time of the original CARP, Music Choice has expanded its channels from 31 to 53, thereby almost doubling the output of its programming and greatly increasing the amount of its creative works made available to the public through the Music Choice service. A copy of the current entire Music Choice channel lineup is submitted as Exhibit MC 14. 53 of these channels are available through our residential audio service.

The Music Choice service also stimulates the creation of new sound recordings. As described in more detail below and in the testimony of Damon Williams, the Music Choice service promotes and increases the sale of sound recordings, as acknowledged by the record labels and artists themselves. The promotional effect of the Music Choice service is also proven by the conduct of the record labels, which provide Music Choice with free copies of every new recording and actively seek to have those recordings played on Music Choice. This increase in sales, which costs the record labels nothing, obviously leads to an increase in the record labels' profits, which in turn gives the labels more money to sign and produce new artists. While this fact is relevant to the other policy objectives, discussed below, it is also relevant to the first



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objective because our service promotes many artists that cannot be promoted by the labels themselves or by terrestrial radio.

The labels have chosen to organize their business in a way that only allows them to focus their promotional activities on a very small fraction of the artists who they believe are most likely to be successful. This often becomes a self-fulfilling prophecy: without promotion new recordings do not sell in any significant number. At the same time, the number one promotional vehicle for sound recordings, terrestrial radio, has been significantly consolidated over the past ten years. A small handful of companies now own almost all of the radio stations. To achieve economies of scale, programming responsibilities have been consolidated. Moreover, in order to promote the few signed artists predicted to succeed, as noted above, the labels encourage the radio stations to play the new recordings from those artists, to the exclusion of others. All of these and other factors have led to a broadcasting landscape where there are few programming formats played on the radio, which leads to fewer and fewer songs getting radio airplay.

The Music Choice service is free of these limitations, because the service programs 53 different stations available through its residential audio service, covering a wide variety of genres and sub-genres, including many formats that do not receive significant airplay on terrestrial radio. Consequently, and as explained further in the testimony of Damon Williams, the Music Choice service helps sell recordings by artists who would otherwise be much less likely to succeed. When an artist's album does not sell a large number of copies the artist is usually dropped by the label, a fate common among artists who are not actively pushed by the labels and not played in heavy rotation on terrestrial radio. Therefore, the sales generated by exposure on Music Choice allow artists, who otherwise might fail, to keep their recording contracts and create new recordings.

The promotional effect of the Music Choice service driving the increase in production of sound recordings is much greater now than it was at the time of the original CARP. The number of Music Choice residential customers has vastly increased in that time, from under 2 million to over 31 million. Music Choice has also improved its service in various ways that increase the promotional effect, as described in detail below. All of these developments have occurred since the first CARP.

**B. To Reflect The Relative Roles Of Copyright Owners And Users In Making The Product Made Available To The Public With Respect To The Relative Creative Contribution, Technological Contribution, Capital Investment, Cost, Risk And Contribution To The Opening Of New Markets For Creative Expression And Media For Their Communication**

The Librarian construed “the product made available to the public” as referring to both the sound recordings and the Music Choice service, and went on to find that all but the first sub-factor favored Music Choice and weighed in favor of setting a lower rate. The intervening ten years have only made Music Choice’s case for a lower rate stronger.

1. Relative creative contribution

In the original CARP, the Librarian adopted without comment the CARP’s conclusion that the record labels’ and artists’ creative contribution to the creation of sound recordings was greater than Music Choice’s creative contribution to its service. In the intervening ten years, Music Choice has greatly increased its creative contribution to the service. As noted above, we have increased the channels offered through our service from 31 channels to 53. Most customers with access to the Music Choice service receive between 47 and 52 channels. Each of these channels is individually programmed, using creative choices in the selection and ordering of songs. Music Choice also has increased the quantity and quality of its on-screen visual content included with the service. In 1996, we had no on-screen component of our service other than basic song identification information. Music Choice also develops and produces, at its own

expense, various promotional content for broadcast in partnership with the record labels and artists, such as on-screen advertisements, artist interviews, shows, live performance recordings and other types of creative content.

In short, Music Choice's creative contribution to its service is much greater than was the case in 1996 and goes far beyond the mere "programming concepts" noted by the Librarian.

2. Relative Technological Contribution

In the original proceeding, the CARP and Librarian found that this factor weighed in favor of Music Choice, based upon the fact that Music Choice had created various technological components of its system for the purpose of opening new avenues for transmitting sound recordings to a larger and more diverse audience. This technology included technology to uplink the programming signals to satellites and transmit them through cable services, technology to identify the name of the sound recording and artist during the performance, and technology for programming, encryption and transmission of the programming containing the sound recordings. The CARP and Librarian contrasted these technological contributions with the fact that the record labels created no new technology related to the Music Choice service.

Music Choice has made numerous additional technological contributions to its service since the original CARP, designed to further increase the exposure of the sound recordings to new and larger audiences, and specifically to enhance the promotional value of the service to the record labels. Examples include improvements to the screen displays containing promotional information such as album art, interesting facts and news about the artist, banners directing customers to record stores or band websites, and song title information; the creation of a production studio where artists visit and record the value-added promotional recordings discussed above that are featured on the Music Choice service, improvements to the digital playback system to improve the programmers' flexibility to provide deeper music lists and more

interesting mixes on more channels; and improvements in the Music Choice website, such as allowing customers to purchase CDs played on the Music Choice service. We have also continued to improve the satellite uplink and other technologies noted by the CARP and Librarian, to put more channels on satellite for distribution.

3. Relative capital investments

This factor is closely related to the prior factor, because each of the improvements listed above required significant financial investments. In finding that this factor weighed in favor of Music Choice at the time of the first CARP, the CARP and Librarian noted that Music Choice had spent [REDACTED] on equipment and technology, while the record labels had not invested any money at all with respect to the equipment and technology used to transmit their sound recordings to the public in connection with our service. While the record labels still have not had to make any investments in equipment or technology to facilitate Music Choice's transmission of their sound recordings to the public, Music Choice, as noted above, has made substantial additional investments since the original CARP for equipment and technology. Examples include [REDACTED] to develop our on-screen displays containing the promotional artwork and information described above; [REDACTED] in the creation of an office and production studio in Manhattan where artists visit and record value-added promotional recordings that are in turn featured on the Music Choice service, [REDACTED] to build the new digital playback system referenced above and to move the system to Manhattan; and [REDACTED] to improve the Music Choice website, including to allow the purchase of CDs played on the Music Choice service. Thus, Music Choice's total investment in equipment and technology is now [REDACTED] the original capital investment noted by the CARP and Librarian. Moreover, even taking this factor as strictly limited to capital investments as that term is used in

the accounting field, Music Choice has made ██████████ in such capital investment in its business since 1996.

4. Relative costs and risks

The CARP and Librarian properly found that the costs and risks incurred by Music Choice outweighed any costs and risks incurred by the record labels for the purpose of this factor. In particular, the Librarian noted that the Music Choice service actually decreased the risk to the record labels by promoting record sales. Ten years later, the relative costs and risks still weigh in favor of allowing Music Choice a lower royalty rate.

(a) Music Choice lowers the record labels' costs

As a preliminary matter, it is important to note that all of the costs incurred by the record labels in connection with their sound recordings are sunk costs. The Music Choice service does not increase those costs in any way. In fact, Music Choice substantially lowers the cost to the record labels for the promotion of their sound recordings. As described in more detail in the testimony of Damon Williams, Music Choice provides various value-added promotions to the record labels and artists. The record labels frequently thank us and recognize the promotional value they receive. These special promotions, which began after the original CARP proceeding, are provided free of charge to the record labels.

(b) Music Choice lowers the record labels' risks

The Librarian correctly noted that even back in 1997, the Music Choice service lowered the record labels' risk by increasing record sales. This fact is even more true today, as the promotional impact to the record labels is much stronger, as described in more detail in the testimony of Damon Williams. As a preliminary matter, the number of customers with access to the Music Choice service has greatly increased, from under 2 million in 1996 to over 31 million



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today. This increased audience alone greatly increases the promotional value of the service to the record labels.

Additionally, we have greatly improved various features of the service that promote record sales. For example, we have increased the promotional information displayed on the television screen when a recording is played, and also redesigned the screen to add graphics so that the customer is more likely to view the screen while listening. We have commissioned surveys that show the vast majority of customers look at the screen to see the name of the artist or title of the song being played. A recent survey conducted by Arbitron shows that almost 40 percent of our customers actually purchase recordings due to hearing them on the Music Choice service. Copies of those survey results, which also include data about customer screen viewing habits, are submitted as Exhibits MC 11-12.

At the time of the original CARP, Music Choice used a toll-free telephone number displayed on screen to allow customers to purchase music they heard on the service. Since then, we have moved to a more effective and user-friendly web-based system. From 1998 through the third quarter of 2006, Music Choice has sold in excess of 380,000 CDs through our service, generating over \$4,875,000 in sales for the record labels.

The record labels themselves frequently acknowledge that Music Choice increased record sales. In addition to specific written and oral testimonials the labels and artists routinely give us, they also send us plaques noting our role in achieving high sales benchmarks. Of course, the very fact that the labels send us all of their new CDs and lobby to have us put the recordings on our service, speaks volumes about their view of our role in promoting sales. This behavior has also increased substantially since the original CARP. Indeed, this lobbying effort has increased so much that some of our programmers have had to limit the days and times when the labels are

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allowed to call and lobby us for promotion and airplay. As noted above, Music Choice also provides various other value-added promotions to the record labels, which further increase exposure and record sales. The labels would obviously not work so hard to get us to play their records if airplay on Music Choice did not have promotional value. Likewise, they would not develop the special promotions with us if those promotions were not effective.

Finally, the CARP and Librarian found that the Music Choice service presented no risk of displacing record sales. This is still true. The Music Choice service complies with the sound recording performance complement, as I described above, which is specifically designed to avoid such sales displacement. It would be very inconvenient for a Music Choice customer to try to record our broadcasts, and even if they did, we do not pre-announce our playlists, so a customer would not know which songs they were going to record. Any recording made would also be a lower-quality analog recording, not a digital one. There are far easier ways for a consumer who wants free music to get it, including digital file sharing. There is simply no reason to believe that our service displaces sales. To the contrary, as noted above, we generate sales for the record labels.

- (c) Music Choice continues to incur significant costs and its risks have increased

The road to financial viability upon which Music Choice has traveled - and continues to travel-- is neither straight nor short. For almost twenty years, Music Choice has struggled to launch, sustain, and grow our domestic residential services in a highly competitive and rapidly changing marketplace. To date, our investors have invested [REDACTED] of capital to fuel our continuing operations. Significantly, Music Choice has dedicated this capital to deploy domestic residential services that provide invaluable promotional benefits to the record industry.

Despite our best efforts, we have not yet recouped accumulated losses from our domestic residential operations, and we will not likely to do so for several years, if at all. In the prior CARP proceeding, we submitted a proposed five-year budget in which we projected that domestic residential operations of Music Choice would achieve over [REDACTED] in total gains between 1996 and 2001. Unfortunately, our domestic residential operations incurred additional losses of [REDACTED] during this period.

Although Music Choice's domestic residential operations finally managed to show a small profit on an annual basis in 2001, our financial future remains as uncertain as ever. On a cumulative basis, accounting for the years of losses experienced prior to 2001, the Music Choice service has still not become profitable and by 2010 we project that we will still have a cumulative loss of [REDACTED]. Since the last CARP, Music Choice has relied almost exclusively upon licensing fee revenues from cable operators to sustain its operations, albeit at levels far below our investors' expectations. As our licensing fee rates have been driven down, Music Choice attempted to develop an advertising program to supplement revenue, but that program has been unsuccessful. I believe that our revenues for the residential service will continue to be limited to, and constrained by, our licensing fees. A schedule showing Music Choice's financial results and projections is submitted as Exhibit MC 15. This document summarizes certain key financial figures relevant to this proceeding, and also contains financial statements detailing the results of Music Choice's residential operations to date as well as projections going forward to 2010 under two different sets of assumptions. The first projections assume no significant adverse impacts going forward. The second projections assume that various likely competitive factors lead to [REDACTED]

[REDACTED]

[REDACTED]  
[REDACTED]

To illustrate the potential of competition to impact our business model, we need only look to last year. Between October 1994 and November of 2005, Music Choice was carried on DIRECTV, a satellite provider of television services. [REDACTED]

[REDACTED] In November of 2005, DIRECTV removed us from their platform and replaced our music channels with those from XM Satellite Radio, a provider of satellite radio music channels. That affiliate loss alone resulted in our net income dropping by approximately [REDACTED] on an annualized basis. [REDACTED]

[REDACTED]. In the past few months, we have learned that [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Music Choice Is A Capital Intensive Business.**

In the original CARP proceeding, it was acknowledged that digital audio services require a tremendous capital investment to start operations and require significant ongoing operator capital to cover costs. That is certainly true in the case of Music Choice. Since January 1, 1998, Music Choice has required additional capital infusions of [REDACTED]. To date, our investors have had to make capital contributions of [REDACTED] to fund the Company. The [REDACTED] capital contribution is [REDACTED]. Even under a best case scenario, the Music Choice residential audio service will not be close to earning back this original capital by 2010.

**Music Choice Has Accumulated Significant Expenditures and Losses Since the original CARP.**

Although Music Choice has been providing domestic residential services for over 15 years, our accumulated operating expenses incurred through the end of 2005 exceeded accumulated revenues for domestic residential operations by a significant margin. We currently estimate that our accumulated revenues will not exceed total operating expenses for domestic residential operations until well after 2010, if at all.

As a result, Music Choice has not yet recouped losses from domestic residential operations. From 1996 through 2005, we experienced accumulated losses of [REDACTED] from our domestic residential operations. In contrast, we projected in the original CARP that domestic residential operations would accumulate net gains of [REDACTED] from 1996 through 2001. In the original CARP, we also projected that we would recoup all of our cumulative net losses for our domestic residential operations by the end of 2001. At present, we project that we will not recoup accumulated losses from our domestic residential operations in the foreseeable future, and will not come close by 2010.

**Music Choice Has Made Substantial Investments in Services That Provide Invaluable Promotional Benefits to the Recording Industry.**

In the original CARP, Music Choice indicated that it had dedicated approximately [REDACTED] percent of all operating expenses to “program, playback, uplink, market, and sell” Music Choice programming. At the time, more than [REDACTED] of those expenses were dedicated to marketing and sales related expenses used to obtain distribution of the service with cable systems.

Since the last CARP, Music Choice has continued to make substantial investments in these services. From 1996 through 2006, Music Choice has dedicated [REDACTED] of its operating expenditures to program, playback, uplink, market, and sell programming. Among other things, these operating expenses have been incurred to make all of the improvements I described above,

which add to the promotional value of the service to artists and record labels. In total, Music Choice has invested [REDACTED] over the past fifteen years to develop, market, program and operate the Music Choice residential service.

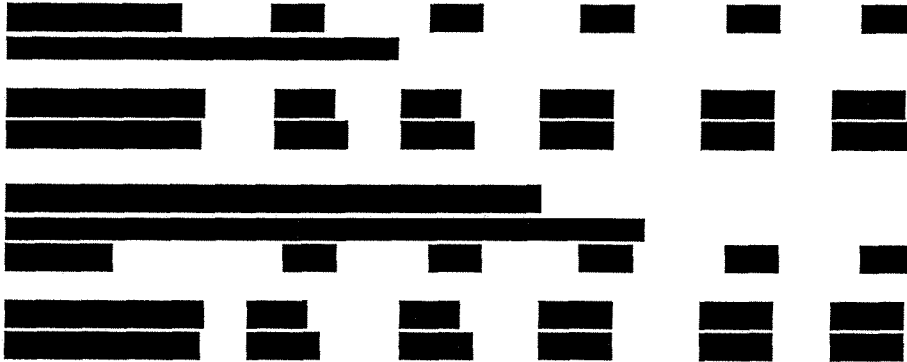
**Music Choice's Financial Performance and Projections Strongly Suggest That We Will Only Be Marginally Profitable Under Our Current Basic Service Model.**

Over the past ten years, Music Choice's financial performance strongly suggests that our basic service model will be only modestly profitable at best. In the original CARP, Music Choice testified that we had charged a price of [REDACTED] when our domestic residential service were sold as a premium service. Once Music Choice migrated away from our unsuccessful premium service model, we started pricing our domestic residential services as a basic digital offering for [REDACTED] per customer/per month. By 1996, Music Choice averaged only [REDACTED] per customer and this number is now down to [REDACTED] on average per customer.

Even before the original CARP was completed, Music Choice began to experience downward pressure on licensing fees. Since completion of the original CARP, the downward pressure on licensing fees has only intensified. The financial data set forth in Exhibit MC 15 illustrates this trend quite clearly. Music Choice's domestic residential customer base has grown approximately 1450% from the end of 1996 through August 2006. In contrast, domestic residential revenues have only grown [REDACTED] of our growth in customer base.

To further illustrate the downward pressure on rates, I have set forth the following chart, which breaks down the average (per customer/per month) rates for Music Choice at various points from 1996 to 2006, with projections under the two scenarios I mentioned above:





As the above chart indicates, the per customer licensing fee revenue rate that Music Choice has been able to generate has dropped significantly from the rate ranges set forth in the original CARP. Music Choice has experienced - and continues to experience - significant pricing pressure when we renegotiate licensing fee arrangements with cable affiliates, due in large part to increased competition from other programming providers. We have also suffered from consolidation in the cable industry, [REDACTED]

[REDACTED]

[REDACTED]

At the same time, increased competition in the residential audio market has decreased our bargaining leverage. A number of much larger and better capitalized companies have recently entered our market. Above I mentioned how we had lost our DIRECTV affiliation to XM, which cost [REDACTED]. Sirius has also recently entered the residential audio market by making its programming available on the Dish Network home satellite service. MTV has recently entered the digital audio marketplace as well with their Urge Digital Audio Radio service and is putting the same competitive pressures on our business as XM and Sirius. Any of our competitors from outside cable, including satellite providers, like

XM or Sirius, and webcasters like Rhapsody, AOL Music or Yahoo! Music, could displace us at any time. Competitors from inside cable, such as MTV, also constitute a competitive threat, as do the non-music cable network channels, such as ESPN, with which we also compete for cable licensing dollars.

For the reasons noted above, we have learned that we can no longer depend upon customer growth to generate additional revenues (and profits) on a going forward basis. By 2010, I project that Music Choice will likely generate on average as low as [REDACTED] [REDACTED] for domestic residential services. At this level, Music Choice's licensing fees will be insufficient to sustain profitability for domestic residential operations if sound recording royalties remain at the current 7.25 percent rate, or even the original 6.5 percent rate.

**We Have Been Unable to Successfully Deploy a New Business Model to Ensure Our Long-Term Viability.**

In 1997, the Librarian found that Music Choice and other digital audio services were "struggling to create an industry and to stay in that business." That finding is equally true for us today. In the last CARP, we had submitted a proposed five-year budget in which we projected that our domestic residential operations would achieve [REDACTED] in total net gains between 1996 and 2001. Unfortunately, the financial performance of our residential operations during those years yielded additional losses, leaving Music Choice's accumulated losses in 2001 at [REDACTED]. As of the end of 2005, our accumulated losses have been reduced, but remain high at [REDACTED].

In light of these poor financial results, Music Choice attempted to implement an advertising revenue model to supplement the declining license fee rates. This model has failed to generate significant revenues and is not likely to do so in the future.

Having failed at moving to an advertising revenue model, Music Choice's opportunities to improve its revenues are severely limited by various risks and pressures on its license fee revenue model, including the following:

(1) Competition

Music Choice's domestic residential services face increasing competition in a rapidly changing marketplace. Music Choice competes for customers, listeners, and advertising revenue with many businesses, including traditional AM/FM radio and digital AM/FM radio, XM Radio and Sirius Satellite Radio, MTV, Internet-based audio providers and other actual or potential DBS and cable audio service providers. Record companies are another source of potential competition. We must also compete with major cable network channels, such as ESPN, for licensing fees from the cable carriers.

Traditional AM/FM radio already has a well-established and dominant market presence for its services and generally offers free broadcast reception supported by commercial advertising, rather than by a licensing fee. These radio stations are currently enhancing their existing broadcasts with additional digital quality services utilizing new technology. These incumbent providers of audio entertainment services typically maintain longstanding relationships with advertisers and possess greater resources than Music Choice does.

The explosion of XM Radio and Sirius Satellite Radio has exerted more competitive pressure on Music Choice, as those services compete with Music Choice's domestic residential operations. Both of these companies is far better capitalized and in a much stronger financial position than Music Choice. For example, XM Radio is a well-funded public company with a market capitalization of approximately \$3.6 billion. Sirius is also a well-funded public company with a market capitalization of approximately \$5.6 billion. Both XM and Sirius have deals with

major automobile manufacturers to include compatible radios in new cars, and provide free service for an introductory period with the purchase of such a car. Once an automobile customer is acquired by Sirius or XM, that customer can purchase an inexpensive receiver to attach to his or her home stereo to receive the service there, in direct competition with Music Choice's residential service.

(2) Changes in Technology

The digital audio broadcasting industry is characterized by rapid technological change, frequent new product innovation, changes in customer requirements and expectations, and changes. If Music Choice is unable to keep pace with these changes, it may ultimately prove to be unsuccessful. In addition, because Music Choice is a small company with limited financial resources and may have a limited ability to raise additional capital from our investors due to our failure to return capital, better-funded competitors may be better positioned to take advantage of unforeseen technological changes that could further enhance their own services.

(3) Continued Erosion of Licensing Fee Revenues and the Affect of Higher Royalty Rates

As noted above, Music Choice has experienced significant downward pricing pressure on its licensing fee arrangements with cable companies. While Music Choice anticipates that this trend will continue for the next several years, there is an additional risk that licensing fee revenues from cable operators may deteriorate even more quickly than currently projected. While Music Choice's continued profitability is highly sensitive to a number of variables, any erosion in per customer licensing fee revenues beyond those projected in Exhibit MC 15 would adversely affect Music Choice's financial performance and results of operations. Indeed, Music Choice has achieved sufficient penetration with cable systems that any significant increase in

licensed cable systems is unlikely. There is only down side at this point. [REDACTED]

[REDACTED]

[REDACTED]

(4) Investment and Expense Levels

Of course, it is very difficult to predict the amount of investment and expense that Music Choice will have to dedicate to its residential service in the future. If the operating costs are greater than expected, or if Music Choice has underestimated the level of investment required to take advantage of technological changes in the marketplace, our financial performance and results of operations could be adversely affected.

**Cost and Risk Summary**

In summary, the financial history of Music Choice indicates that the Company has failed to recoup investment and costs as quickly as anticipated. While Music Choice's domestic residential services finally achieved a modest level of annual profitability in 2001 after 10 years of operation, this profitability is in no way assured into the future.

A "snapshot" approach in this proceeding would provide little, if any, indication of Music Choice's financial success and viability on a going forward basis. From our investors' perspective, and in terms of their investment, the business has a long way to go towards being profitable. Indeed, the long-term profitability and viability of Music Choice is dependent upon its ability to overcome serious competitive, industry, and marketplace challenges in the next several years. Music Choice has still not achieved cumulative profitability for its residential service, and will not do so in the foreseeable future. The royalty rate set by the original CARP based on its erroneous estimate of the applicable composition performance fees has only exacerbated the pressures on Music Choice. A failure to lower the royalty will strangle our residential business and doom any hope of achieving cumulative profitability and return of capital.

Accordingly, it would be wrong to ignore these challenges in the current proceeding by extrapolating Music Choice's annual profitability and revenues (even at its modest present levels) into the future for purposes of this proceeding. This factor continues to weigh strongly in Music Choice's favor and justify a lower rate.

5. Relative contribution to the opening of new markets for creative expression and media for their communication

It was obvious to the CARP and the Librarian that Music Choice, by the very nature of its service, contributed more to the opening of new markets for creative expression for the very same reasons discussed above, including providing greater exposure to a broader range of music than terrestrial radio and promoting record sales in that broader range. As I have described above, these features of the Music Choice service have greatly increased since the original CARP.

6. Conclusion on relative roles

The Librarian set the 6.5 percent rate in the original CARP proceeding based on his finding that the relative contribution of Music Choice in all but the first of the factors above outweighed the contribution of the record labels. For the reasons stated above, Music Choice's relative contribution in all five factors has greatly increased since that time.

**C. To Minimize Any Disruptive Impact On The Structure Of The Industries Involved An On Generally Prevailing Industry Practices**

In finding that this statutory policy objective weighed in favor of setting a lower rate, the CARP and Librarian found two factors particularly compelling. First, that setting a rate too high ran the risk of having a catastrophic impact on the pre-existing subscription services. Second, because the record labels were so large and had much revenue compared to the services, the difference between a high and low royalty for the services would have a negligible impact on the recording industry. These facts have only increased in relevance and truth.



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The rate set in the original CARP proceeding was obviously too high, in large part due to the CARP's inaccurate estimate of the services' composition performance right licenses. This is proven by the fact that of the three original services, only Music Choice essentially remains a substantial force in this market. As noted above, DMX declared bankruptcy and sold off its assets and Muzak's residential service is so inconsequential to its overall business that it did not bother to actively participate in this proceeding. The industry has been disrupted by the original rate, which must now be reduced pursuant to this policy objective.

As explained in detail above, Music Choice's residential service continues to be marginal and has still not achieved cumulative profitability or returned the capital investment of its investors. Moreover, Music Choice is subject to increasing competitive pressure from various new types of music services such as satellite and webcasters. The record labels remain much larger and continue to generate much more revenue than Music Choice, putting them in a far superior position to absorb the impact of a lower rate. The entire [REDACTED] in royalties Music Choice has paid the record labels over the last ten years amounts to less than [REDACTED] percent of the retail value of the labels' total shipment of sound recordings during that time, which was well over \$130 billion. A copy of the RIAA's 2005 Year-End Statistics, downloaded from the RIAA website, is submitted as Exhibit MC 16. In this context, it is clear that this policy objective weighs even more heavily than at the time of the original CARP.

Finally, setting a lower rate for Music Choice will not have any precedential value with respect to the record labels' negotiations or proceedings for other licenses. Section 114(f)(1) of the Copyright Act expressly provides that the terms and rates of the statutory license "shall distinguish among the different types of digital audio transmissions." The Librarian correctly

held that “[t]his language gives the Panel and the parties broad discretion in setting rates for different types of digital audio services, when such distinction is warranted.”

**D. To Afford The Copyright Owner A Fair Return For His Creative Work And The Copyright User A Fair Income Under Existing Economic Conditions**

The Librarian held that this factor was generally satisfied by the consideration of the benchmarks and the other statutory policy objectives. I would only add the observation that this objective does not end with affording the copyright owner a fair return, as SoundExchange apparently believes. Music Choice must also be allowed a fair income under existing economic conditions. As I have discussed above, Music Choice has still not become profitable on a cumulative basis, after ten years of paying the royalty. We will not be able to return our investors’ capital investments for some time, rendering it difficult to attract any new capital. In contrast, every penny paid to the record labels for this statutory license is pure profit. The labels do not invest any additional capital or incur any additional costs in connection with the royalty they get from us. Under these circumstances, this policy objective clearly weighs, along with the others, in favor of lowering the rate paid by Music Choice.

**III. Ephemeral License**

The ephemeral license provided in Section 112(e) of the Copyright Act has no independent economic value. These copies are not sold or distributed, and are not used for any purpose other than to facilitate our licensed performances. Consequently, the ephemeral license fee should be included within the 2.6 percent fee for the performance license, and attributed a negligible percentage of that fee.

Notably, we had to make such copies at the time of the first CARP. Although we operated the system using a CD jukebox, for the 60-70% of the recordings we featured on more than 1 channel, we made 1 to 5 copies of each recording. Those copies were not separately

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valued at that time. Nor did the record labels ever ask for a fee to make those copies. Although we no longer play directly from CDs and therefore make more overall copies for our current system, we still make far fewer copies than other digital broadcasters, such as webcasters, make. Many webcasters choose to make several different copies of each sound recording to have versions for streaming in different bitrates. This allows their services to be used by consumers with different levels of bandwidth in their Internet access. Some webcasters also make different versions to vary the sound quality of each version, with the higher quality recordings reserved for users who pay a higher subscription fee. Each of these versions of a sound recording may be duplicated numerous times by a webcaster to create cache copies, back-ups and redundancy.

In our current system, a new song is first copied from a CD into the programming server array. That copy is automatically transmitted down to the playback server array and to a backup server array located at our corporate offices in Horsham, Pennsylvania. From there, the recording is copied to the playback and redundant Horsham playout computer for the channel in which the song is programmed. In all, this process creates 5 copies.

If a song is going to be programmed in multiple channels, this process is duplicated, resulting in 5 additional copies of that track for each extra channel on which it airs. Because we have increased our channel lineup and consequently program more narrowly focused formats, we now estimate that only approximately 15 percent of our music is programmed in more than one channel. Even fewer recordings are programmed in more than two channels. Due to this substantial decrease in the number of songs played across multiple channels, the great majority of our songs are copied only 5 times. Because some of the songs were copied 5 times under the old system, for a certain number of songs we do not make any more copies in the new system than we did at the time of the first CARP.

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It bears repeating that none of these copies have independent value. Unlike webcasters, we do not make multiple “masters” of the song for various bitrates and sound qualities, which provides some value to webcasters. It is clear that even the record labels do not consider the ephemeral license to have any independent worth. In our settlement of the last CARP, the record labels did not negotiate the rate separately, and our resulting royalty rate did not break out the ephemeral license as a separate fee. We specifically discussed with RIAA and SoundExchange the fact that the copies did not in themselves provide added value to our customers. As a result, the ephemeral license is subsumed within the current performance royalty, and is not even apportioned a percentage of that rate. Even if the entire initial increase from that settlement of our rate from 6.5 percent to 7 percent were attributable to the new ephemeral license, that would mean the ephemeral license was valued at only 7.7 percent of the performance fee. Of course, the increase in our rate was not due to the ephemeral license, it was due to the threat of expensive litigation against a trade association with practically unlimited resources.

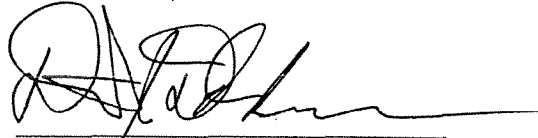
The labels did a similar thing when they settled with the webcasters. In the original webcasters CARP, the ephemeral license rate was set at 8.8 percent of the total performance license fee. When the rate came up for renewal and was settled, the settlement rates folded the ephemeral license into the performance license, although they allocated 8.8 percent of the license fee to the ephemeral license. Notably, however, the SoundExchange website does not mention the ephemeral license in its schedule of current webcasting rates, and certainly does not attribute any portion of the current fee to ephemeral copies. A copy of the relevant pages of the SoundExchange website are submitted as Exhibit MC 17. The bottom line is simple: you pay a fee for the performance, which is what digital broadcasters are in business to do, and that license includes the necessary incidental rights to operate the service. If an additional amount is set,

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however, it should be no greater than 4 percent of the performance royalty and be set as a separate rate so Music Choice has the option of re-configuring its service to avoid the need for the ephemeral license.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed in New York, New York on the 26th of October, 2006.

A handwritten signature in black ink, appearing to read 'David J. Del Beccaro', written over a horizontal line.

David J. Del Beccaro

## THE ELUSIVE SYMBIOSIS: THE IMPACT OF RADIO ON THE RECORD INDUSTRY

STAN J. LIEBOWITZ

ABSTRACT. Unlike television broadcasters, who must negotiate with the copyright owners before they can broadcast movies, radio broadcasters need not negotiate with the copyright holders for the sound recordings broadcast on radio. In the United States radio broadcasters have no obligations whatsoever to the copyright owners of the sound recordings (although they do have obligations to the copyright holders of the music contained in the sound recording). The reason for this discrepancy appears to be that radio broadcasters have argued, and it is generally accepted, that radio play benefits record sales and thus there is no need for radio broadcasters to purchase the rights to broadcast the sound recording. This impact of radio play on record sales is commonly referred to as a “symbiotic” relationship between these two industries. Yet there appears to be no systematic examination of this relationship. In this paper I present evidence indicating that radio play does not benefit overall record sales. There are obvious implications for copyright. I also examine, by way of comparison, television’s negative impact on the movie industry.

### 1. INTRODUCTION

The impact of new technologies on copyright owners has become a topic of increasing interest in the last few years. Although formerly new technologies, such as photocopying, videorecording, and audiotaping have drawn some consideration from analysts, there is apparently nothing like the threat of several hundred lawsuits against otherwise ordinary citizens, as has happened with MP3 downloads, to attract serious attention.<sup>1</sup>

In this paper I examine an older technology – broadcast radio – and its impact on the prerecorded music industry. Radio might, after all, be considered very much like more recent technologies, such as MP3 downloads or videorecording. In the one case we have producers of records or movies concerned that MP3s or VCRs will damage the markets for sound recordings or movies (television). In the other case we have radio broadcasters freely using sound recordings while possibly taking away business from the record industry. Since radio uses sound recordings as a basic ingredient in its broadcasts, and broadcasts might be a substitute for listening to prerecorded music, one can imagine radio threatening the sound-recording marketplace. Except for the technology, there really might be very little difference between these cases.

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<sup>1</sup>Although MP3 downloading and its impact on record sales has been the leading copyright story in the news lately, other issues are waiting in the wings. For example, the new generation of digital videorecorders, currently known as “TIVO” allow users to skip commercials while recording. If such recorders become common, what would happen to the market for advertising based television, and what if anything would be the appropriate regulatory response?



Of course, this requires that radio broadcast be harmful to the sound recording market. The potential harm to copyright owners from MP3 downloads or video-recorders is easy to envision, even if the existence of actual harm is a contentious empirical issue.<sup>2</sup> The potential harm to copyright owners from a technology such as radio is somewhat less obvious, but nonetheless real. The key is the extent to which radio listening is a substitute or complement for the purchase of copyrighted musical works. If radio listening is a substitute for purchase of copyright works, and if radio broadcasters do not have to pay for their use of these works there is an obvious potential market failure that is essentially the same as for direct copying technologies, with the only difference being that listening to a broadcast is the consumer's replacement for a purchased item, instead of a copy (e.g., MP3) of the original being a replacement. It is, however, a distinction without an economic difference.

Society has not seen radio as a threat from which the sound recording industry needed protection. For example, although the 1995 Digital Performance Right Act for Sound Recordings granted copyright owners of the recordings control over digital audio transmissions, they have no such right if the transmission is a non-subscription broadcast transmission, i.e. traditional radio, which continues its exemption from having to pay for the rights to broadcast sound recordings.<sup>3</sup> The logic of this distinction appears to be based on the claim that there exists a "symbiotic" relationship between radio broadcast and the sales of sound recordings.

For example, Edward O. Fritts, president and CEO of the National Association of Broadcasters, when testifying about proposed Internet radio royalties stated:

"The history of copyright protection for sound recordings reflects a dominant, recurring theme: Congress repeatedly took pains to ensure that the grant of copyright *protection did not affect the symbiotic relationship between the radio broadcasters and the record industry*. Congress recognized both that the record industry reaps huge benefits from the public performance of their recordings by radio stations, and that the granting of a public performance right could alter that relationship to the detriment of both industries."<sup>4</sup>  
(my italics)

Of course, it is easy to understand why the president of the NAB would want to suggest that radio broadcasters should not have to pay for their broadcast of sound recordings. Imagine, by way of analogy, television broadcasters arguing that they should be allowed to broadcast movies without paying for the rights.

Nevertheless, the Courts appear to also believe this claim.<sup>5</sup> Judge Cudahy, in writing the Appeals Court decision about Internet radio royalties stated:

"While radio stations routinely pay copyright royalties to songwriters and composers (through associations like the American Society

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<sup>2</sup>See, for example, Liebowitz (2004), or Peitz and Waelbroeck (2003).

<sup>3</sup>This is true in the US. Other countries (such as Canada) have property rights on radio broadcast of sound recordings in addition to property rights on the broadcast of the musical composition.

<sup>4</sup>Text available online at <http://www.house.gov/judiciary/frot0615.htm>.

<sup>5</sup>Similar phrasing can be found in Canadian Copyright Board decisions and also in arguments put forward in Hong Kong. I have not, however, performed a thorough examination of the degree to which this claim is accepted throughout the world.

of Composers, Authors, and Publishers and Broadcast Music, Inc. (“ASCAP”) and Broadcast Music, Inc. (“BMI”)) for the privilege of broadcasting recorded performances of popular music, they do not pay the recording industry royalties for that same privilege. Perhaps surprisingly, this state of affairs, until about ten years ago, produced relatively high levels of contentment for all parties. *The recording industry and broadcasters existed in a sort of symbiotic relationship wherein the recording industry recognized that radio airplay was free advertising that lured consumers to retail stores where they would purchase recordings.* And in return, the broadcasters paid no fees, licensing or otherwise, to the recording industry for the performance of those recordings. The recording industry had repeatedly sought, however, additional copyright protection in the form of a performance copyright.”<sup>6</sup> (my italics)

Additionally, academics and other commentators appear willing to believe in the symbiotic relationship, as evidenced in this quote from Edward L. Carter (see Carter, 2003):

“In fact, there is credible evidence that AM/FM streaming benefits sound recording copyright holders: “The economics of AM/FM Radio Webcasting work the same way as they do for over-the-air broadcasting, a symbiotic relationship between the record companies and the radio stations who ‘promote these songs to 75 percent of Americans who listen to the radio each day.’” Evidence of on-line broadcasting’s beneficial impact for copyright holders is not contradicted by the fact that the broadcasts are digital because streaming, unlike downloading into a format such as MP3, does not involve creation and storage of a permanent digital audio file on a radio listener’s computer.”

Although there is much talk about symbiosis between radio and sound recordings, I have seen no reference to actual *evidence* supporting this claim although I address this point in more detail in Section 5.

This question of radio’s impact on the recording industry does not appear to have received much if any attention in the modern economics literature. The focus of economists, to the extent that they have examined radio at all, has tended to be on the allocation of spectrum, with several notable papers on the subject.

Yet the impact of radio on the recording industry should be of interest for several reasons. These industries are highly influential on the popular culture and seem to have an importance far greater than their share of GDP. More generally, understanding what happened with previous technologies may help our understanding of the present and future technologies, particularly if we discover that some received wisdom is incorrect. Finally, various regulations and rules, and a form of regulatory property rights – what are commonly called “performing rights” – are based on estimates of the market outcomes likely to arise under free negotiations, and

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<sup>6</sup>Bonnevill International. V. Peters, October 17, 2003, United States Court of Appeals for the Third Circuit, N°01-3720; page 5. Text available online at <http://www.ca3.uscourts.gov/opinarch/013720p.pdf>.

these estimates will be skewed if the impact of radio broadcast is misunderstood by the regulators.

## 2. SOME BASIC ECONOMICS

Americans spend approximately 2.7 hours per day listening to radio but only 40 minutes listening to prerecorded music.<sup>7</sup> Yet the main ingredient of radio broadcasts is prerecorded music, for which radio stations pay very little if anything. If listening to radio were treated like a substitute for listening to prerecorded music (much as blank tapes were treated as substitutes for the purchase of a prerecorded tape by partisans for the RIAA<sup>8</sup>) then simple arithmetic might suggest that five times as many records would be sold if radio didn't exist. Although we shouldn't take the math seriously, the possibility of harm is certainly worth examining.

Radio listening can be thought to have two possible components. One is a pure element of consumption. Listening to music is enjoyable and if a radio station can make musical selections that are in tune with a listener's tastes, the listener can derive considerable satisfaction. The fact that individuals spend, on average, almost three hours per day listening to the radio would seem to imply that there is in fact a rather important consumption element in radio listening. The other possible component of radio listening is most likely something of a by-product to the first. One motive for listening to radio is to learn about new musical compositions to help in the purchase of CDs – a motive based on future shopping plans.

It would seem, based on casual observation, that for most users the first motive dominates the second. It would be difficult to argue that the shopping motive dominates the consumption motive since it seems highly unlikely that individuals would listen to radio for almost three hours per day merely to learn which CDs to purchase for the purpose of improving their listening experience of forty minutes per day.<sup>9</sup>

These impacts of radio broadcast fit neatly into a model that had been previously been created to analyze the impact of copying on the creators of originals. Liebowitz (1981) identified three effects caused by copying: substitution, exposure, and aftermarket effects.

The substitution effect, as its name implies, occurs when someone forgoes the purchase of the original (record) because they have access to an alternative (the copy or in this case, radio play). The substitution effect maps nicely into the consumption motive of radio listening. If a copy or alternative is a replacement for the purchase of an original, demand for the original falls.<sup>10</sup> This cannot help but harm the seller of originals.

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<sup>7</sup>2001 data found in the US Statistical Abstract, Table N°1102. Media Usage and Consumer Spending: 1996 to 2005. Available online at <http://www.census.gov/prod/2003pubs/02statab/infocom.pdf>.

<sup>8</sup>See, for example, Alan Greenspan's testimony in 1983 on the Home Recording Act. Hearings before the subcommittee on Patents, Copyrights and Trademarks, October 25, 1983.

<sup>9</sup>This ignores the component of radio listening devoted to 'talk' which obviously does not normally have an exposure effect.

<sup>10</sup>As long as the seller of the original does not receive extra payment, or indirect appropriation, of the copy when he sells the original, which is the after-market effect. If, for example, everyone makes one tape of each record they purchase, the seller can just raise the price of the record by the amount of value generated by the copy, which rotates the demand curve counter-clockwise. The after-market effect is clearly not relevant in the context of radio. See Liebowitz (1981) for a fuller explanation.

The exposure effect occurs when someone makes a purchase they would not have made except for the fact that they were able to sample the product in another venue (listening to a copy or on the radio). This maps nicely into the shopping motive. Note that the exposure effect doesn't necessarily have a positive impact on sales, and thus doesn't necessarily have an impact different than the substitution effect. Learning more about a product prior to purchase may allow consumers to derive greater utility from any single purchase. At any given price, however, they may purchase fewer units because they become more quickly satiated. Producers, therefore, may discover that their revenues fall when consumers can better sample the products.<sup>11</sup>

The exposure effect and substitution effect, therefore, are relevant to our analysis. These two theoretical factors played an important role in the arguments made during the Napster case. The economic experts for Napster argued that individuals downloaded MP3s to *sample* songs (exposure effect). These experts suggested that Napster users would purchase CDs containing the songs discovered through downloading. The experts representing the recording industry, on the other hand, argued that downloading MP3s was undertaken as a replacement for the purchase of the original (substitution effect). The court found the arguments made by the recording industry experts to be more convincing and although the decision was probably the correct one, the empirical support put forward by the recording industry was, in my opinion, no stronger than that put forward by Napster defense.<sup>12</sup>

By way of comparison, the exposure effect seems likely to be stronger in the case of radio than in the case of MP3 downloads. Downloaders were unlikely to just encounter music that they enjoyed since downloaders are required to look for music using a search engine. Radio stations, in contrast, play music not chosen by and often unknown to the listener. The listener's choice of the radio station or program, however, reveals that the listener enjoys the particular genre of music played by the station, increasing the possibility that the listener will encounter new music that he or she will wish to purchase.

The substitution effect, at first blush, seems likely to be stronger in the case of MP3 downloads than for radio play of music due to the fact that downloads provide the listener with a copy of the song that has virtually identical attributes to the purchased version. There would seem to be little reason to purchase the song under these circumstances, leading to a very strong substitution effect. Listening to the radio does not leave listeners with a useable alternative that can substitute for the purchase of prerecorded music.

However, the activity of downloading files seems less likely to be a substitute for listening to prerecorded music, whereas listening to radio is an activity that can substitute for listening to prerecorded music. The three hours per day spent

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<sup>11</sup>This is a variant of the "chocolate bar" or "light bulb" example sometimes found in textbooks. Increasing the amount of chocolate in a bar, or increasing the longevity of bulbs, holding the price of a bar or bulb constant, has uncertain impacts on the number of units sold and on the total revenues. The elasticity of demand for the now less expensive underlying product (chocolate or light output) determines whether revenues increase or decrease and whether units sold increase or decrease.

<sup>12</sup>The empirical evidence put forward to support the substitution effect was to compare sales in record stores near universities to record stores not near universities, under the assumption that college students were using Napster much more heavily than ordinary record buyers. In principle this test was fine but the results did not support the claimed results. See Liebowitz (2002), chapter 7.

listening to radio are three hours that cannot be spent listening to prerecorded music. Since listening to prerecorded music generally requires the purchase of the prerecorded music, the more time individuals spend listening to radio the less time spent listening to prerecorded music and the smaller the volume of purchases of prerecorded music.

As is often the case, only empirical evidence can tell us what impact radio broadcast has on the market for sound recordings.

### 3. THE IMPACT OF SOME ANALOGOUS TECHNOLOGIES

Before turning our attention to the empirical evidence relating radio broadcasts with on record sales, it is instructive to examine several other instances of new media technologies. In this case I briefly examine the impact of two new technologies on the movie industry since this information will be helpful when examining radio and sound recordings.

**3.1. The Impact of the VCR.** It is common in this literature, particularly in the more popular press, to encounter the claim that copyright owners always cry wolf when a new technology appears to threaten the old, only later to discover that the new technology was nothing short of a bonanza. This claim implies that foolish copyright owners misunderstood the new technology and were fortunate to have been thwarted in their attempts to restrict the new technology.

There clearly have been times when the industry was dead wrong about a technology. But that doesn't mean the industry was always wrong.

One often reads pundits pointing out that VCRs were a boon to the movie industry although the industry fought the VCR. This claim is not exactly correct.

The facts are that shortly after the emergence of the video recorder, leading movie producers did bring a copyright infringement case (the Betamax case) against the producers of the device. Movie and television program producers viewed these devices as a threat to the industry. It is also true that the sale of prerecorded movies has become a leading revenue source for movie producers.

But the threat posed by VCRs was not based on substitution of viewing videotapes instead of viewing the theatrical release. Nor was it based on the possibility of a homemade videotape substituting for the purchase of a commercially prerecorded tape. Instead, it was based on the fear that videotapes would allow users to time-shift television programs and do so in a way that allowed them to avoid the commercials.

This was a legitimate concern because broadcast television depends on commercials for its revenues and if increasing numbers of videorecorder users were to have deleted commercials, television broadcasters would have lost the ability to pay for the programs and movies that made up their broadcast schedule.

In reality, the likelihood that consumers would have been able to skip many commercials was very low. Since a single machine could not both record and playback at the same time, it is unlikely that average television households could have used VCRs for any but a small portion of their viewing. For example, the average television household watches almost 7 hours of television per day. Almost half of this viewing occurs during the prime-time period of 7:00-11:00 p.m. and a majority of television revenues are generated during this prime-time period.<sup>13</sup> If the average

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<sup>13</sup>In the Central and Mountain time zones the prime-time period runs from 6-10 pm.

household prefers viewing prime-time programs during the prime-time period, it could not engage in a great deal of videotaping of prime-time programs unless it owned more than one VCR. At that time, use of multiple VCRs was not envisioned.

Assume, for example, that a household that normally watches 3 hours of programming on Monday evenings cannot watch television one Monday and has taped 3 hours of prime-time programming from Monday's (M) programs. Assume now that there are 3 hours of prime-time programming which members of the household would like to watch on Tuesday night. They would not be able to simultaneously watch the tapes of Monday's programs and record the programs that they would then miss on Tuesday while they were viewing Monday's programs since a single VCR cannot both record and playback at the same time. In other words, it is impossible to time-shift viewing by one day so as to skip commercials if the viewing of tapes takes place during the same time period the programs are broadcast. In fact, if members of the household enjoy watching 3 hours of prime-time television shows every night, as does the average American household, they would have difficulty fitting the three hours of Monday's taped programs into their future viewing unless they increased their television viewing above what it would have been had they not owned the VCR. This is a serious constraint on the size of any time-shifting behavior.

In fact, no great time shifting came to pass and the VCR did not damage the television market. Eventually, it opened up an entire new market – the sale and rental of prerecorded tapes – that proved a boon to the movie industry, as I discuss below.

One of the interesting changes in technology is the current hard-disk based TIVO which allows simultaneous playback and recording, as well as automatic deletion of commercials. Because the TIVO removes the constraint of being unable to play back and record at the same time, it poses a far greater threat to advertising revenues than did the VCR. Television broadcasters have legitimate reasons to be concerned, notwithstanding the lessons from the VCR.

Nevertheless, even the TIVO requires some effort on the part of the viewer. If past history is any indicator, there is every reason to believe that many users will refrain from taking the effort to avoid commercials because the effort will seem too great. That may have to be the best hope of the advertising-based broadcast industry as technology continues to erode the intrusion of commercials.<sup>14</sup>

**3.2. The Impact of Television on the Movie Industry.** Television took audience away from the movies. But television also made possible the VCR which allowed the movie rental business to get started, and which has been a boon to the industry. It is sometimes claimed that television, rather than destroying movies, as was originally feared, merely brought a new source of revenues to the party, allowing movie/television producers to gain from the new technology just as the VCR allowed movie producers to benefit from a large new market for pre-recorded movies.<sup>15</sup>

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<sup>14</sup>There are other defensive actions that can be taken by the broadcast industry, the most important among them is making it more difficult for the TIVO to detect when a commercial is on when it is recording in 'commercial-skip' mode. At the moment the TIVO relies on information contained in the broadcast itself to identify commercials.

<sup>15</sup>Typical is this statement found in an editorial in the May 6th 2002 edition of USA Today, "Movie theaters through television would ruin them. Later, they feared the VCR.



Unlike music, movies are usually seen only once or twice, not over and over again, so the very concept of an exposure effect is limited. Also, television cannot broadcast movies without contracting with the copyright owner for permission to do so. This prevents television from broadcasting movies until the owners of those movies decide they want them broadcast, which happens to be long after theatrical release.<sup>16</sup>

Since movies do not appear on television until after they have finished their theatrical run, having a movie broadcast on television cannot possibly enhance the theatrical box office for the movie (i.e., no exposure effect for theatrical revenues) although there might be some exposure effect for the sale of DVDs and videotapes from individuals who watched part or all of a movie on television.

Because of this timing, television viewing of a movie cannot be a substitute for the viewing of that movie in the theaters. Although viewing a particular movie on broadcast television cannot be a substitute for viewing that movie in the theaters, the activity of watching television is an activity that can substitute for going to see a movie at a theater. Thus there is a strong potential substitution effect in the *time* spent viewing, particularly given the large amount of time spent watching television (approximately four hours per day for adults) which precludes the viewer from engaging in other activities at the same, time and which provides a similar, although smaller-scale, form of video entertainment.<sup>17</sup>

Those who have examined this issue generally understand that television delivered a powerful blow to the movie industry. The movie industry was mature when television became popular in the 1950s and was popular in a way that is hard to imagine today. In the 1930s and 1940s, as revealed in Figure 1, the average American went to the movie theater approximately 30 times per year, compared to the current frequency of approximately five times per year.<sup>18</sup> It is clear that the frequency of movie attendance was far greater prior to television than it is now.

The penetration of television into American households was remarkably rapid during the 1950s, increasing from 9% in 1950 to 87% in 1960. As one can see from Figure 1, that period of time coincides well with a dramatic drop in the number of times Americans went to the movies per week. It also, unsurprisingly, coincides with a large drop in movie box office revenues as a share of personal consumption expenditure, as seen in Figure 2.

The timing of the onset of the new, much lower, equilibrium is another datum strongly supporting the thesis that television viewing caused the change in movie

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If Spiderman's \$114 million weekend is any measure, both predictions were off." See <http://www.usatoday.com/news/opinion/2002/05/07/edtwof.htm>.

<sup>16</sup>Movie studios are masters at price discriminating through different markets over time, going from high valued consumers (theaters) to video/pay cable and finally to broadcast television. According to Vogel (2001) table 2.6, a viewing-hour in 1999 generated \$4.50 in a theatre, \$0.55 in pay cable/home video, and \$0.06 on broadcast television.

<sup>17</sup>This is likely to become more accurate as the use of large high definition televisions with surround sound become more common.

<sup>18</sup>Source: Screen Source at [http://www.amug.org/~scrnsrc/theatre\\_facts.html](http://www.amug.org/~scrnsrc/theatre_facts.html). There was one problem with the data provided at this source. Values were given from attendance, average ticket price and box office gross. The first two variables, if multiplied together, should equal the third, and usually did. But there were major inconsistencies in the early 1960s and the 1930s. In some cases, the listed attendance figures seemed less reasonable than an attendance figure derived from ticket prices and total revenues. Nevertheless, in Figure 1 I used the listed admissions values since it makes little difference for our purposes and it provides an additional five years of data.

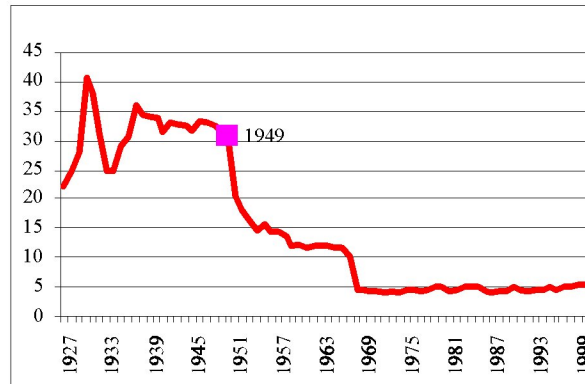


FIGURE 1. Yearly Admissions Per Capita 1926-1999

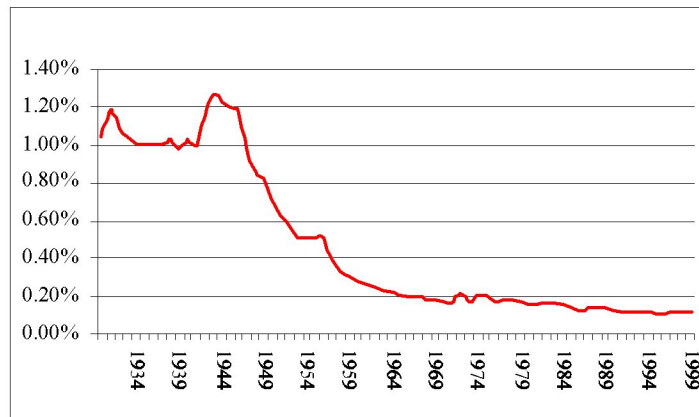


FIGURE 2. Box Office as Share of Personal Consumption

attendance. By 1960, households were spending over five hours per day watching television and by 1965 television's penetration was almost complete at 92% of households. The full effect of television, therefore, should have been felt. At the same time, movie attendance and revenue as a share of personal consumption had entered the modern era which has shown remarkable stability for four decades at approximately 5 viewings per year and approximately 0.15% of personal consumption expenditures.

Movies clearly have lost much of their market to the activity of viewing television. Although the evidence is overwhelming that television had a devastating impact on the traditional movie industry in terms of theatrical admissions and revenues, there is somewhat more to the story.

Broadcast television provided the audience and the rationale for the early cable television industry. The cable networks that arose over the years had a superior revenue generation model than broadcast television since cable networks had both

advertising and subscription fees as potential sources of revenues whereas broadcast television only had advertising. Eventually, cable television networks largely displaced broadcast television as an important market for movies that had finished their theatrical releases.

Similarly, the advent of the VCR, which was itself dependent on the existence of television sets, allowed the movie industry to tap directly into the view-at-home phenomenon by selling prerecorded tapes. According to numbers in Vogel's text (see Vogel, 2001) that I have repackaged in Table 1, home-video revenues to movie studios were double those of theatrical release in 2000, and payable/networks/syndication revenues from movies were virtually the same as theatrical release revenues.<sup>19</sup>

The invention of broadcast television, which was revenue-depleting to movie studios, opened the door for these later revenue-enhancing technologies. What then is the net effect that television has wrought?

|  |         |        |
|--|---------|--------|
| Theatrical Release   | \$3,100 | 19.25% |
| Home video   | \$7,800 | 48.45% |
| Pay Cable  | \$1,600 | 9.94%  |
| Network Television   | \$300   | 1.86%  |
| Television Syndication   | \$800   | 4.97%  |
| Made for TV  | \$2,500 | 15.53% |
| \$ in millions. Estimates for year 2000: Foreign revenues excluded. From Table 2.8, pg. 62 |         |        |

The numbers in Table 1 indicate that these additional sources of revenues might have quadrupled movie revenues beyond their simple theatrical levels if you examine only revenues from films made for theatrical exhibition. If you add in movies that were made for television, revenues quintuple.

Yet box office revenue as a share of personal consumption expenditure is currently at about 0.12%. This is one eighth the level of the 1930s. Since these additional television related revenue sources appear to be less than eight times current theatrical revenues, one would conclude, using this admittedly back-of-the-envelope level of detail, that the net effect of television on movie revenues is still negative. The impact appears even more negative in comparison to overall entertainment's share of personal consumption expenditures, which rose from 5.5% to over 8% over this period. Movies might have been expected to participate in this growth, if not for the introduction of television.<sup>20</sup>

One final point worth noting is that the policy implications are very different for television damaging the movie business than for, say, MP3s damaging the sound recording industry. In the former case consumers switch to a different, preferred product. The damage to the movie industry occurs because consumers no longer consume movies. There is no market failure. In the latter case consumers continue to consume the same music, but the existence of MP3s cuts off the payment stream

<sup>19</sup>Table 2.8 in Vogel (2001). Unfortunately, these data in Vogel need to be taken with a grain of salt since there are apparent inconsistencies. His table 2.5 implies that Pay Cable revenues are almost as large as home video and two and a half times as large as network and syndicated television added together. Also, his Figure 2.9 implies that Pay Cable is between 15% and 20% of total revenue, much higher than in his Table 2.8.

<sup>20</sup>See Vogel (2001), page 21.

that consumer would be willing to pay if property rights were more easily enforced. Disconnecting consumption from payment, as MP3s do, clearly causes a market failure since units of music with net social value will no longer be produced.

#### 4. THE IMPACT OF RADIO ON THE PRE-RECORDED MUSIC MARKET

This backdrop now brings us to the main topic of the paper: the impact of radio on sound recordings.

At the time of radio's introduction, the idea of transmitting entertainment and news through the airwaves was revolutionary. New institutions and new business models were developed to take advantage of this technological breakthrough, including the idea of using advertising to support the market, which has largely continued to this day.

Radio grew into a major industry, with a profound influence on the culture and social mores. Although it was later to be eclipsed by television, it continues to this day to be one of the major forms of entertainment, with the average American listening to approximately three hours of radio per day.<sup>21</sup>

Radio stations generate positive values to listeners, as evidenced by the willingness of listeners to spend several hours each day listening to radio even though they have to put up with advertising. Advertisers pay for the right to place their advertisements in radio programming, generating the revenues upon which private radio stations depend for their existence.

We have already discussed the two possible impacts that radio might have – substitution and exposure. It is likely that both effects are at work at any one time. The relative strength of each, however, determines the overall impact of radio on record sales.

The prevailing view is that radio play enhances the market for prerecorded music. Much of this view can be traced to the fact that firms in the recording industry carefully cultivate their relationship with radio broadcasters to make sure that radio stations play their recordings. Often, this cultivation crosses over into what is known as “payola”, a pejorative term indicating that record companies are paying radio stations, station programmers, or disc-jockeys to play particular recordings. This is discussed more fully in section IV below.

As we shall see, the recording industry underwent a devastating decline shortly after the advent of radio. Even some commentators who assign the cause of the recording industry's decline to radio's emergence believe that the major impact of radio on record sales changed from substitution to exposure, and that radio now enhances the sales of recordings. For example, according to the BBC website:<sup>22</sup>

The record industry had spent the first twenty years of the century convincing the public that they needed a source of music in the home but they didn't foresee the possibility that it may be free. Unfortunately, The Radio Corporation of America (RCA) had by the early 1920s started mass-producing commercial radios which, while acoustically inferior, offered a far wider range of news, drama and music. The record companies retaliated by drawing up contracts for their major artists, forbidding them to work for this rival medium. This move to limit radio's output was doomed to failure

<sup>21</sup> Arbitron claims that 20 hours per week is the average.

<sup>22</sup> See <http://www.bbc.co.uk/music/features/vinyl/19201929.shtml>.

as new vacuum tube amplification rapidly improved reception and sound quality. Record sales plummeted.

Nevertheless, the BBC continues:

Victor subsequently brought out a machine that could reproduce these [recording] innovations, and the increase in fidelity finally ended the drop in sales... Shortly afterward, players and radios were combined, ending rivalry between media. In fact, the new entertainment conglomerates could now use one (radio) to promote the other (records) and a whole new age of marketing was upon us.

We shall have more to say about this history in the next section.

**4.1. Some Natural Experiments.** Determining the empirical relationship between radio listening and the purchase of prerecorded music is not a simple task. If one could design an experiment to test this relationship, one possibility would be to prevent radio broadcast of music in some randomly chosen localities while continuing it in others and then comparing the sales of records in the areas with and without radio broadcasts of music. Unfortunately setting up such an experiment is not within the capability of this, or probably any, researcher.

Alternatively, if one had sufficiently good data and sufficient understanding of the various exogenous and endogenous relationships, one might design a structural equation system to try to statistically determine the net impact of radio on record sales. Finding sufficiently plentiful and high quality data is a daunting if not impossible task, however, and there are always questions about the validity of any particular structural equation model.

The method I have chosen, therefore, is to examine two natural experiments that allow a before/after comparison of radio's impact on record sales. One natural experiment occurred with the advent of radio in the US, which occurred during the decade of the 1920s and 1930s. The second natural experiment was the belated introduction in the last three decades of the twentieth century of commercial radio into a British market that already had a well established record industry and public broadcasting entity.

Neither of these natural experiments is perfect, but both should be capable of providing useful insights.

**4.2. Radio's Introduction in America.** The recording industry was already fairly well established in the US when radio came upon the scene. Radio grew rapidly and became the primary entertainment medium in the country in a fairly short time. The impact of radio on the record industry appears to have been quite dramatic.

**4.2.1. A Brief History of the Recording Industry<sup>23</sup>.** Thomas Edison invented a tinfoil recording process in 1877 which he soon improved by replacing the tinfoil with wax cylinders. To avoid Edison's patents, Emile Berliner developed in the late 1880s a competing recording technology based on discs, which came to be known

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<sup>23</sup>Some of the material for this section is based upon Morton (2000), and also from a very nice history that can be found at the BBC's "History of Vinyl" page: <http://www.bbc.co.uk/music/features/vinyl/>.

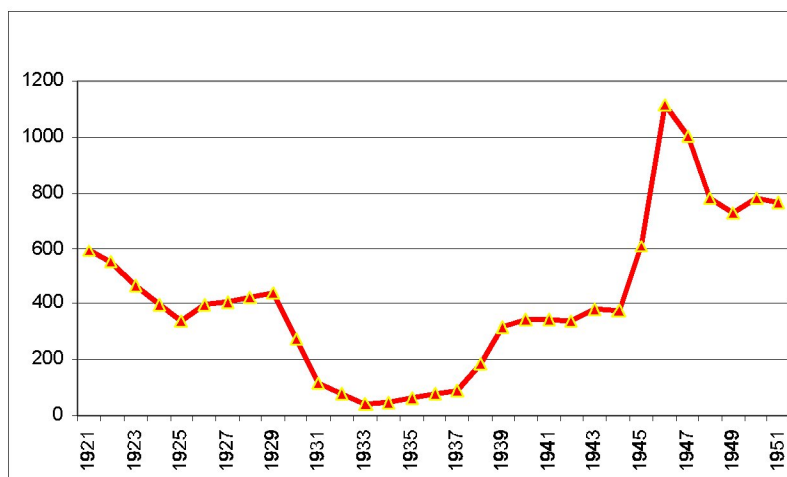


FIGURE 3. Record Sales in 1983 dollars

as the gramophone. A battle between the cylinder and the disc took place over several decades but discs had won the day by 1920. Edison's company introduced its own disc, known as the 'Diamond Disc' with great fanfare and in a precursor to the ubiquitous "is it live or is it Memorex" commercials, embarked on public demonstrations asking the public to guess whether they were hearing live performers or a disc. Supposedly, millions of Americans took this test between 1915 and 1925.

At this time, the recording industry was still engaged in acoustic recording. There were no microphones and no amplifiers. Singers, for example, shouted into a recording horn and the sound energy was converted into a mechanical signal on the disc. In the mid 1920s engineers at Western Electric devised a new method for performers to sing into microphones, which converted the sound into electric currents controlling an electromagnetic record cutter, to produce a recording. These discs were identical in playback format to the old discs and could be played on the older equipment. Many phonographs of the time still reproduced the sound acoustically, without electrical amplifiers.

Statistics provided by the Recording Industry Association of America (RIAA) indicate that sales of records were quite robust in 1921, the first year for which I have data and, ironically, the first year of commercial radio. As shown in Figure 3, sales revenues were almost \$600 million in 1921, using 1983 dollars. To put this value in perspective, sales revenue in 1950 was only 33% higher, in real dollars, and revenue per capita was actually slightly lower in 1950. Thus market for records was fairly mature in 1921, at least in terms of the revenues generated.

As documented in Figure 3, for almost twenty years after 1921 the market went nowhere but downhill.

The earlier quote from the BBC claimed that the sales decline came to an end when radio and the recording industry equalized quality and learned to take advantage of each other's strengths. In fact, although sales did stop their decline from 1926-1929, they remained well below their 1921 levels. Further, the apparent slight

increase in the late 1920s occurred during a period of rapid economic growth when a more rapid increase in record sales might have been expected.

The drop in record sales that occurred after 1929 was far more precipitous than the drop during 1921-25. Clearly the depression must have had a large role in this painful decline, beginning as it did right after the stock market crash. The market for records dropped by more than 90% from 1929 to 1933. But although it is easy to blame most of the drop, or even the entire drop, on the depression, we should look a little more carefully at other clues that might provide some additional insight before we attribute the entire decline to the depression.<sup>24</sup>

A somewhat different view of the vicissitudes of the recording industry can be gleaned from Figure 4 which measures record sales both as a percentage of GDP and in sales per capita. As can be seen, the fall in record industry revenues was far greater than the fall in GDP, since as bad as the depression was, the 26% drop in GDP was, thankfully, nowhere near the 90% decline experienced by the recording industry.

It is conceivable that extremely high income elasticities for sound recordings were responsible for the decline in record sales being so much larger than the decline in income in the early 1930s, but such elasticities are inconsistent with the decline in record industry revenues that occurred in the 1920s, at a time when the economy was experiencing robust growth (48% from 1921 to 1928). The elasticities that would be implied if the depression were to be given credit for the entire drop in record sales are also inconsistent with the rather pedestrian improvement in recording industry revenue that occurred in the decade after WWII.

By way of comparison, the movie industry, which suffered a serious decline from 1929 to 1932, came back strongly afterward, matching its pre-depression values (at least in attendance) by 1935, as can be seen in Figure 1.<sup>25</sup> We will see below that radio continued to grow rapidly through the depression. Yet the market for records did not show signs of life until 1938 and even then failed to approach the levels seen in the early 1920s. As Figure 4 makes clear, even then record sales failed to keep up with the growth in the economy since it isn't until after the war that sales return to pre-depression values as measured by share of GDP.

Given this evidence, it seems difficult to blame the entire magnitude of the decline in sound recording revenues during the depression on the macro economy alone. The recording industry appears to have had some other factor(s) hindering its performance, both immediately before the depression and continuing through the depression. The most obvious candidate is the competition from the radio industry.

*4.2.2. A Very Brief History of Radio.* Radio, of course, did not suddenly arise fully formed. There were many experimental broadcasts and many amateur stations. Yet

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<sup>24</sup>The BBC history blames the decline entirely on the depression. They state: "If market forces affected the recording industry, the Great Crash of 1929 changed it irrevocably as [sic] leisure items such as electrical items becoming luxury goods. Thomas Edison's cylinders and discs ceased production entirely, while smaller independents were swallowed by new conglomerates that could weather the economic storm... For the first time business interests overtook artistic ones. While pandering to mass markets created a certain dumbing-down in the output, the effects of mass-production did result in a large drop in price of records... One very significant part of the market did, however remain boyant - the Juke-box."

<sup>25</sup>It took the movie industry an additional two years to essentially catch up to total revenue from 1929.

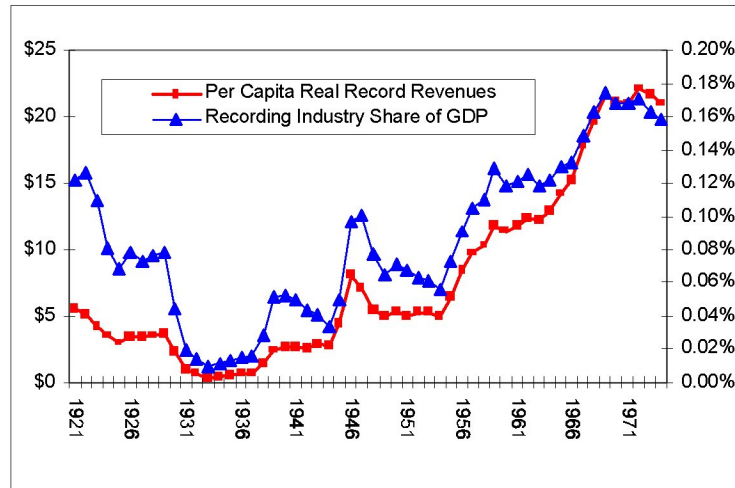


FIGURE 4. Two Measures of the Recording Industry

the first commercial American radio station is generally accepted as being KDKA in Pittsburgh, going on the air continuously in November of 1920. Numerous stations went on the air in the next few years, and by 1923 the number of stations was over 500, which remained the approximate equilibrium value for the next fifteen years.<sup>26</sup>

The number of homes with radios grew somewhat more slowly. In 1922 it was claimed that 1 million households were going to own radios before year end. In 1926, at the time of the formation of NBC, it was claimed that 5 million households had radio, out of a total of 26 million, for a penetration rate of 20%.<sup>27</sup> The penetration rate of radio appears to have reached two thirds of all households by 1935.<sup>28</sup> Clearly, the penetration of radio largely occurred from the early 1920s until the late 1930s.<sup>29</sup> National broadcasting networks, with their superior production values, arose in the mid to late 1920s.

Not only did people buy radios, they used them. It is a fairly remarkable testament to the power of this new medium that during the depression households would spend the money required to purchase a radio receiver.

4.2.3. *Interpretation.* From 1921 on, the story of radio was one of constant growth for the next two decades. This is the inverse of the recording industry, which had fairly constant decline over this period. There are good reasons to think that this relationship is more than happenstance.

<sup>26</sup>Reported in Figure 1 in Hazlett (1997). Hazlett's data are taken from Bureau of the Census.

<sup>27</sup>NBC was created by Radio Corporation of America (RCA), the world's largest producer of radio sets at the time, based upon a station purchased from AT&T. RCA took out large advertisements in newspapers in September of 1926. In the advertisement it was claimed that at that time 5 million homes had radio, with 21 million yet to have a radio. This would be a penetration rate of 19.2%. A copy of the advertisement can be found here <http://earlyradiohistory.us/1926nbc.htm>.

<sup>28</sup>According to <http://history.acusd.edu/gen/recording/radio2.html>.

<sup>29</sup>According to Hettinger (1971), page 42, Table II, the number of radio receivers in the US (in millions) from 1923 until 1932 was: 1.5, 3, 4, 5, 6.5, 7.7, 9, 12, 15, 16.68. From Figure 2 in Hazlett's Columbia Law Review article, a similar, fairly smooth increase is shown.



Listening to radio or sound recordings could both be done at home. The acoustic quality of radio was often better than what was available with early recordings. Sound recordings in the 1920s and 1930s tended to allow only four minutes or so of play on a side before another record would have to be loaded onto the platter, making them fairly inconvenient for listening to music at long stretches. It is not surprising, therefore, that there was a reasonable substitution effect that hurt the market for records.

If there was a strong substitution effect between listening to radio and listening to phonographs then the decline in record sales can easily be explained by the growth in radio. The strong decline in record sales implies that either there was little or no exposure effect, or that the substitution effect was overwhelmingly dominant.

The timing of radio's ascendance and the record industry's fall seems more than coincidental. There are some other alternatives that might be suggested, however. The movie industry also was also likely to be substitutes for the consumers' entertainment dollar. Yet there is a stronger case for radio having the major impact. Radio was audio based, as were records, radio was music based, as were records, and radio was listened to in the home, as were records. It is also the case that movie "talkies" began in the mid 1920s and attendance skyrocketed from 1926 to 1929, yet in those particular years record sales were hardly affected as would have been expected if movies were responsible for the decline in records sales that occurred (see Figure 1). Further, the record industry had a dismal performance during the 1930s, yet movies did not grow in that decade – radio did.

Thus the evidence supports a claim that radio was strongly detrimental to record sales during this period.

Others have commented on this possibility as well. According to Morton (2000), page 26:

“Record companies welcomed the subsequent transfer of electrical technology from radio and motion pictures to the phonograph industry, but hated the effect these two new forms of entertainment had on the record business. Radio was the biggest threat. On the eve of broadcasting's debut, between 1914 and 1921, record sales had doubled, largely because of sales of popular music. With the inauguration of network radio in the middle 1920s, the market for popular recordings collapsed, resulting in a number of companies leaving the field or changing ownership.”

The timing of the growth in record sales beginning in 1955 is also interesting although I would hesitate to draw too much from it. Returning to Figure 4, a sustained rise in the fortune of the record industry began at the same time that television began to eclipse radio as the dominant entertainment medium in the country in terms of viewers'/listeners' time. Did the shift away from radio as the premier entertainment medium in the country allow the recording industry to breakout of its longtime doldrums? Perhaps, but some alternative explanations such as the rise of rock and roll, or the rise in the Long Playing record have enough strength as alternatives to preclude a clear affirmative answer.

4.2.4. *Caveats.* Clearly, the imprecision in these data, the fluidity of the content and technology, and the changing market conditions all make it impossible to have

a totally clear-cut test of the impact of radio on the recording industry. There are several caveats to make.

**Quality of Sound.** The relative quality of radio and recordings was different in the 1920s than it has been in recent times. Radio, of course, was based on electricity. Radio required electrical amplification and speakers in order to operate. This gave radio an initial advantage over acoustic phonographs in terms of sound quality. Although the sharing of amplifiers and loudspeakers between radio and phonographs was to become common, with the two devices often merged into a single device, radio at first had sonic advantages. Nevertheless, when recordings increased in quality in the mid 1920s, due to the use of an electrical as opposed to acoustical recording process, there is no evidence of an exposure effect increasing record sales. At best the decline came to a halt for a few years. There is no support for a claim that radio play enhanced record sales.

The relative quality of sound on records versus radio may have been different in 1920s than it was for most of the latter part of the century. Radio, in the second half of the twentieth century, had lower quality than sound recordings. The inconvenience of using records largely disappeared, particularly when the 33 rpm LP record was introduced in 1948 and automatic record changers became more popular. The impact of radio broadcast on record sales in the 1920s and 1930s, therefore, might have changed in later decades.

**Use of Music.** One might argue, with some justification, that radio originally played live music when it played music and that it did not play records. Certainly, many of the popular network radio programs, such as *Amos and Andy*, did not play records. But there were many radio programs based on music. As long as the music played on radio was also recorded on records, the impact of radio play on record sales should be largely the same as it would be whether or not the specific recordings were played directly on the radio. Further there is some evidence that local radio stations did play records.<sup>30</sup>

Although the role of radio in creating an audience for election returns, horse races and prizefights is the stuff of legend, the mainstay of radio broadcasting was music. Analyses of network radio broadcasts by Hettinger (1971) revealed that music made up about two thirds of the content in the period 1927-32. Further breaking down the data, he discovered that popular music made up 35%-40% of programs, with semi-classical music at about 15% and variety music at about 5%.<sup>31</sup> Popular music was played more frequently during the prime time hours with the largest audiences climbing from about 25% in 1927-28 to about 54% in 1931-32. Radio programming, even from this early period, was focused on music and particularly popular music, so it is reasonable to expect that the recording industry would be impacted by whatever effects radio might potentially have.

**4.3. The Introduction of Advertising-Based Radio in England.** The second experiment occurs at a considerably later period of time, the last third of the 20th century, in England. British radio broadcasting was much different from American radio during the 1950s and 1960s. This is particularly striking given that the two

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<sup>30</sup>For example, see <http://earlyradiohistory.us/1922can.htm>.

<sup>31</sup>Table XXIII on page 218 in Hettinger (1971). Variety music, according to Hettinger, changed over the period from mainly classical to mainly popular. Variety programs, which also contained much music tended to have about 5% of the programming.

countries had such similar charts of best-selling records. This difference provides the basis for our second natural experiment.

4.3.1. *A brief history of British Radio.* Radio was monopolized for many years in England by the British Broadcasting Corporation (BBC). The BBC was originally (1922) a consortium of six radio manufacturers who were granted a virtual monopoly over the sale of receivers, with the British Post Office overseeing the consortium.<sup>32</sup> These manufacturers wanted to promote the existence of radio stations so that they could sell more receivers, just as RCA did by creating NBC. In return for the monopoly on the sale of receivers, the manufacturers agreed to give ten percent of the revenues from the sale of receivers to the BBC.

The BBC became a full-fledged public corporation in 1927, financed by a government tax levied on radio receivers. Being a creature or at least a quasi-creature of the government, the BBC endured certain restrictions on its practices. Initially, due to pressure from the press which was concerned with possible declines in newspaper circulation if radio were to broadcast news, the license provided “that the Company shall not broadcast any news or information in the nature of news except such as they may obtain on payment from one or more...news agencies.” For years the BBC would begin its news broadcasts by acknowledging the sources from which they had purchased their information.

There were other restrictions more important for our purposes. There was a ‘needle-time restriction’, limiting the number of minutes that recorded music was permitted to be played weekly. This was due to agreements with the Musicians’ Union – since the BBC employed its own orchestra(s) playing music, allowing the playing of records would have reduced the need for musicians.<sup>33</sup>

As the decades ensued, the BBC lost touch with at least one very important segment of the music listening public – the teenagers of the country. One type of music that it did not program to any great extent was rock and roll. The bottom line is that radio listeners in England had only the BBC to listen to, with its handful of networks, only one of which catered to popular tastes (the Light Programme) and even that station had only a few shows with recordings of popular music. The program that gets the most mention, a show called the “Pick of the Pops,” was broadcast only once per week.<sup>34</sup> Since the BBC was the only game in town, listeners were captive to its choice of programming. Unlike a producer in a competitive market who must cater to the demands of customers, the BBC was free to program what it felt was appropriate.

Competition is a hardy weed, however. Radio competition, disallowed by law, arose in an unusual form – pirate radio stations, which became quite influential in the mid 1960s.

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<sup>32</sup>Some of this material is taken from “The Unofficial Guide to the BBC” [http://www.vaxxine.com/mastercontrol/BBC/chapters/Bbc\\_form.html](http://www.vaxxine.com/mastercontrol/BBC/chapters/Bbc_form.html).

<sup>33</sup>This comes from a history of the pirate radio stations <http://radiolondon.co.uk/kneesflashes/stationprofile/hist.html> although another history of UK radio <http://dSPACE.dial.pipex.com/town/pipexdsl/r/ara93/mds975/Content/ukradio2.html> suggests that it was record companies that wanted to limit the amount of time that records could be played on radio. The limit on record play, at least in the post-war era, was 37.5 hours per week.

<sup>34</sup>There was also the Home Service, which was speech based, the Third Programme, which was highbrow, and the World Service which went to other countries.

The demand for rock-and-roll was sufficiently large, and the topography of the country was such, that entrepreneurs were able to turn some converted old boats into floating radio stations parked just outside of Britain's territorial waters, with monikers such as Radio London and Radio Caroline. These were advertising-based, for-profit ventures (one was even set up by a group of Texans).

Although it seems impossible to get accurate numbers on the audiences of these stations, they were sufficiently large that the British government, in 1967, passed the Marine Offences Bill which made it illegal for any Briton to conduct business or interact with the pirate radio stations. This essentially put the pirates out of business.

To appease discontent caused by the shutdown of the pirate stations, the BBC promised to create its own network to play popular records. The stage was also set for the entrance of commercial radio that began in the early 1970s.<sup>35</sup>

4.3.2. *The Impact of Private Commercial Radio.* Private radio stations in England are supported by advertising, thus having the disadvantage of annoying the listener by having to intersperse commercials within the broadcast. Nevertheless, the increase in stations has been impressive and so too has been the growth in audience. Commercial stations finally achieved the majority of listening hours in 1995.

The impact of private radio stations came in three waves.<sup>36</sup> A small number of private stations were licensed beginning in 1973. The government was reluctant to increase the number of stations until new legislation in 1980. The early 1980s saw another increase in the number of stations. The mid 1990s saw another burst of activity and increase in the number of stations. At first the private radio stations were heavily regulated. Over time these regulations softened.

Some evidence on the historical size of the commercial radio audience can be gleaned by the share of advertising generated by British radio stations. It grew from 0.24% in 1973 to 2.49% in 1978 where it largely remained until the early 1990s when it began to steadily grow, achieving a level of 6% in 2000.<sup>37</sup>

The end result of this is that historically, British radio audiences have not had the capacity to listen to popular recorded music on radio to anywhere near the same extent as American audiences. Prior to 1967 there was a very great difference in this ability. This difference began to diminish in the late 1960s and early 1970s and then continued to diminish in the 1980s and 1990s.

If radio play significantly increases record sales, then British record sales should have increased significantly relative to American record sales beginning in 1967 and continuing over the next decade or two, holding everything else equal. By comparing record sales in the two countries over these decades we can test whether radio play increases record sales. Unfortunately, reliable UK data on record sales do not begin until 1973.

Figure 5 examines the ratio of UK/US sales per capita of full-length albums, whether vinyl, cassettes, or CDs. There is no evidence of an upward trend caused by greater radio airplay of popular music.

<sup>35</sup>There is a very nicely detailed history of these events at [http://www.icce.rug.nl/%7Esoundscapes/VOLUME06/Fight\\_free\\_radio.html](http://www.icce.rug.nl/%7Esoundscapes/VOLUME06/Fight_free_radio.html).

<sup>36</sup>This discussion is based upon Meg Carter (2003).

<sup>37</sup>These figures can be found on page 57 of Meg Carter (2003). British private radio's share of advertising still appears to be less than the share of other countries. Its share is about one third the US and Canadian level and one half that of Australia (data taken from TVBasics, TVB of Canada, 2003), which might not be surprising given the still very large share of BBC radio.

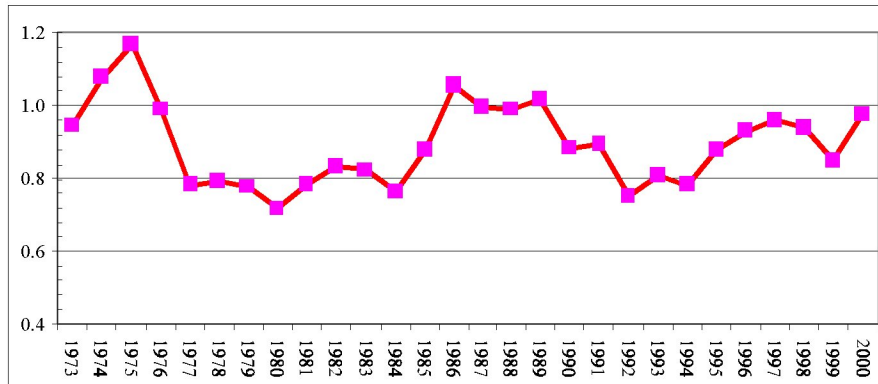


FIGURE 5. UK/US Albums Per Capita

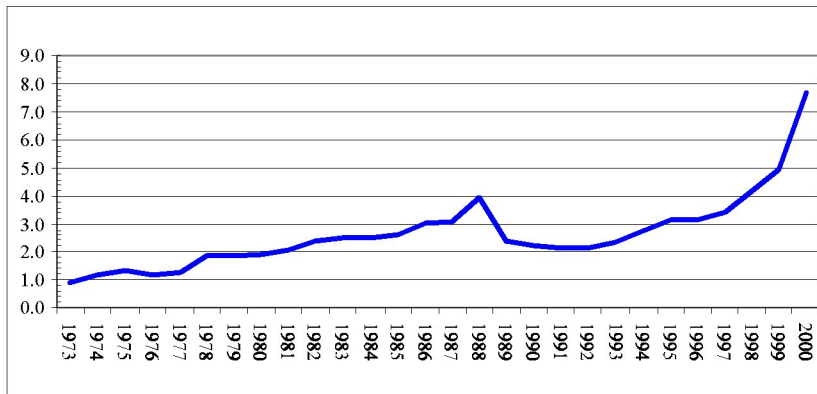


FIGURE 6. UK/US Singles Per Capita

Figure 6 examines the sales of singles, regardless of physical format. Here there might appear to be some evidence for the claim that radio increases record sales since sales of singles increased dramatically in the UK relative to the US. Of course, sales of singles in both countries fell significantly over this period and singles are no longer an important market.

In an attempt to gauge the importance of the increase in UK singles relative to US singles, I assumed that albums contain ten singles and then merged the two series together. Figure 7 presents the results which clearly show that singles have very little impact on the overall market.

These comparisons do not control for other economic variables such as price or income. If by chance the price of records rose in the UK relative to prices in the US, then the quantity sold in the UK would have been expected to fall relative to US quantities. In that case it might still be possible that radio enhanced the market for records in the UK even if the quantity of albums sold in the UK did not rise relative to the US. Alternatively, if incomes in the UK rose by less than incomes in

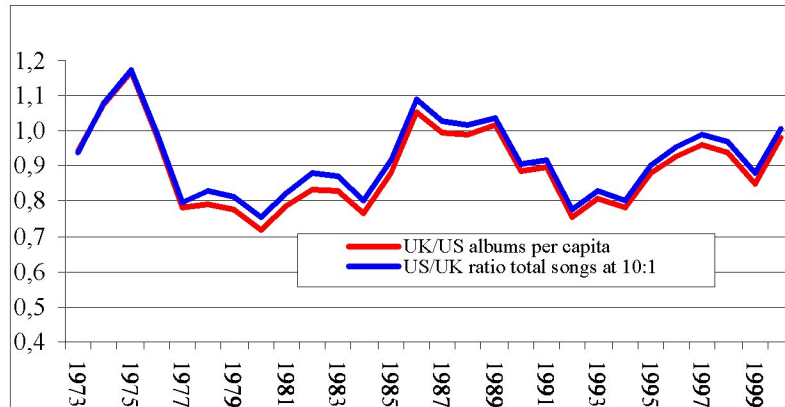


FIGURE 7. UK/US Ratio of Pre-recorded Songs

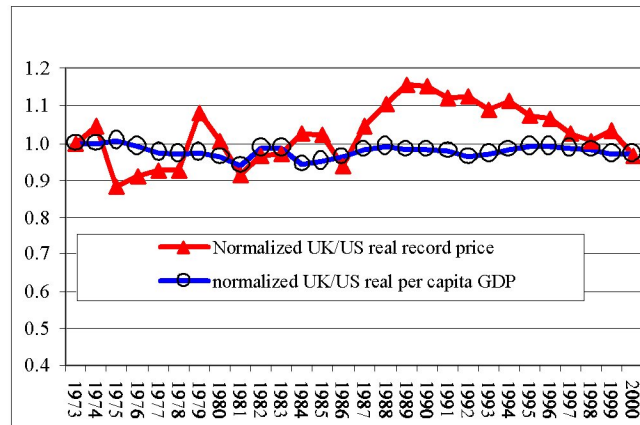


FIGURE 8. UK/US Normalized Incomes and Prices

the US and if record sales are positively related to income, then radio might have had a positive impact on record sales in the UK even though the quantity sold did not rise in the UK relative to the US.

These possibilities are examined, starting with Figure 8. From Figure 8 we can see that changes in both inflation adjusted record prices and GDP per capita were extremely similar between the two countries. Changes in UK inflation adjusted income (GDP per capita) very slightly failed to keep up with changes in US income over this period (2.9% lower over the entire period). Inflation adjusted record prices in the UK increased at a rate very slightly (3.3%) below the US rate although they were above the US rate for much of the period.

With this background it would seem impossible for the impact of price and income to alter the overall conclusion that the introduction of commercial radio had little impact on the quantity of records sold.

Table 2 presents the results from regressions with the percentage change in per capita album sales as the dependent variable and the percentage change in real price and percentage change in real per capita GDP as independent variables. The coefficient on income is positive and significant in both countries. The coefficients on price in either country are not statistically significant, although they are at least of the correct sign.

In both countries we have an income elasticity of approximately two but with fairly large standard errors. From Figure 8, we know that the relative income changes in the two countries never deviate by more than 5%. At the end of the period, the income change in the UK was less than 3% below that of the US. Adjusting UK sales, which rose 2% less than in the US, for the higher income growth in the US, would leave the UK with a mere 4% increase in sales over the US during a three decade period during which radio play of popular music increased dramatically. Given the standard errors we certainly cannot support a claim that radio play increased sales of sound recordings.

|                                      | B         | Std error | t      | Sig.  | R-squared | Adjusted R-squared |
|--------------------------------------|-----------|-----------|--------|-------|-----------|--------------------|
| US                                   |           |           |        |       | 0.285     | 0.222              |
| Constant                             | -2.30E-02 | 0.021     | -1.105 | 0.28  |           |                    |
| Yearly percent change in real income |           |           |        |       |           |                    |
| Yearly percent change in real price  |           |           |        |       |           |                    |
| UK                                   |           |           |        |       | 0.153     | 0.082              |
| Constant                             | -9.00E-03 | 0.024     | -0.382 | 0.706 |           |                    |
| Yearly percent change in real income | 1.729     | 0.868     | 1.991  | 0.058 |           |                    |
| Yearly percent change in real price  | -0.13     | 0.307     | -0.423 | 0.676 |           |                    |

The final piece of evidence concerns the revenues generated in the two markets. By using revenues as the variable of interest we can allow both prices and quantities to vary in the two countries. In order to avoid difficulties often associated with trying to control for exchange rate movements, I calculate the share of GDP going to the recording industry in the two countries.<sup>38</sup> The results are reported in Figure 9.

<sup>38</sup>Although not reported in the text, the 1973 share of GDP devoted to record sales was remarkably similar in the two countries (0.14% in both the UK and the US). One could argue that this similarity of ratios indicates that the UK's lack of commercial radio stations in 1973 neither hurt nor hindered record sales, which is not too far from the conclusion I reach in the paper. Differences between the two countries, however, make it unwise to merely compare the absolute shares. The approach taken in the text, to compare the change in relative shares in the two countries, normalizes each country to its specific characteristics (income, tastes, and so forth).

Again, we have a result inconsistent with a claim that radio airplay increases record sales. In fact, over these decades the share of GDP devoted to records in the UK fell relative to the share in the US, and the fall was in the vicinity of 13%. This is slightly more lopsided than the other measurements, but still is not a particularly large difference.

The bottom line from this examination can be stated as follows: The introduction of commercial radio in the UK did not increase the market for prerecorded music, contrary to the claims of symbiosis often made in the literature. Although there is some evidence that radio may have harmed sales slightly, the evidence is weak. The most reasonable conclusion would appear to be that the introduction of commercial radio had a fairly small negative impact on the record industry in the United Kingdom.

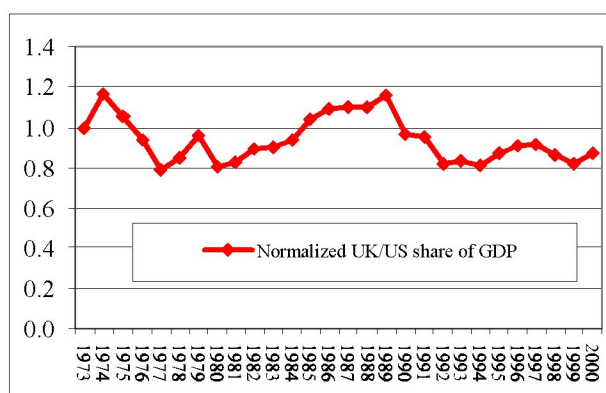


FIGURE 9. UK/US Record Industry Share of GDP Normalized

This conclusion is supported by statements made by the UK Monopoly and Mergers Commission:

The broadcasting of records – for instance, the ‘Top 40’ singles or the airing of new product by popular disc jockeys – has long been an important promotional tool for new record artists and products. We were told, however, that the growing quantity of music broadcast on radio has moved towards becoming a substitute for record sales, with a consequent negative impact on such sales. Consumers who want to hear a particular kind of music are increasingly likely to be able to find a radio station that concentrates on it. This can reduce the incentive to buy records, while the growing facility for high-quality home taping may reduce the necessity for such purchases. We were told that these effects had been reinforced by the removal in 1988 of the restriction on independent radio stations which limited them to nine hours of ‘needletime’ per day. We have been told that this trend is likely to accelerate when high-quality digital broadcasts are introduced.<sup>39</sup>

As long as these other characteristics remain constant between the two countries, the approach taken in the text is more robust and instills greater confidence.



**4.4. Additional Evidence.** Intuition can provide some help in achieving an understanding of the impact of radio broadcast on overall sound-recording sales. Americans spend approximately 3 hours per day listening to radio broadcasts.<sup>40</sup>

According to the US statistical abstract, music listeners spend about 45 minutes per day listening to pre-recorded (presumably purchased) music.<sup>41</sup> Note that the time spent listening to radio is three to four times as large as the time spent listening to pre-recorded music. Without the availability of radio, some consumers who would otherwise have listened to radio would most likely instead listen to more prerecorded music, since that is the closest substitute. If we make the perfectly reasonable assumption that the more time one spends listening to prerecorded music, the more prerecorded music that one will buy, it is easy to see how radio might harm sound-recording sales.<sup>42</sup>

The most clear-cut possibility of pre-recorded music sales being harmed by radio is likely found in the activity of listening to music while driving. According to an Arbitron study of in-car radio use, one third of radio listening occurs in automobiles, which works out to about one hour per day.<sup>43</sup>

If radio were not available, the only way to listen to music in automobiles would be to listen to pre-recorded music. Alternatives, such as movies, reading, or television are not available while driving. With the alternative of silence, and no other substitutes available, it seem very likely that if radio were unavailable, the one hour per day currently spent listening to radio in automobiles would convert to time spent listening to pre-recorded music.

An increase of one hour per day in listening to pre-recorded music would more than double the daily amount of time the average person spent listening to pre-recorded music. It is hard to believe that such a doubling would not dramatically increase overall sound-recording sales. And this is just for automobile usage of radio.

Looked at in this light, therefore, it is easy to imagine that radio broadcast might decrease the purchase of sound-recordings.

## 5. PAYOLA AND THE FALLACY OF COMPOSITION

It is fairly well-known that record labels will often attempt to pay to have their records played by disc-jockeys. In fact, there is a special term that has been coined to describe this behavior – payola – and in the 1950s several American disc-jockeys

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<sup>39</sup>Page 79 of the document, “The supply of recorded music; A Report on the Supply in the UK of Prerecorded Compact Discs, Vinyl Discs and Tapes Containing Music,” Monopolies and Mergers Commission; presented to Parliament by the Secretary of State for Trade and Industry by command of Her Majesty, June 1994.

<sup>40</sup>According to Arbitron, Americans spent 20 hours per week in listening to radio in the Fall of 2002, which can be found here: <http://wargod.arbitron.com/scripts/ndb/ndbradio2.asp>

<sup>41</sup>The number is 263 hours per year found in the US Statistical Abstract, Table N0. 1102. Media Usage and Consumer Spending: 1996 to 2005. <http://www.census.gov/prod/2003pubs/02statab/infocom.pdf>

<sup>42</sup>The advent of cassettes and CDs allowed prerecorded music to become portable for the first time, presumably increasing the amount of time that individuals spent listening to prerecorded music. Liebowitz (2004) demonstrates that the increase in the penetration rate of portable devices coincides with a large increase in sound-recording sales and suggests that causation runs from new uses to increased listening to increased sales.

<sup>43</sup>The study can be found here: <http://arbitron.com/downloads/InCarStudy2003.pdf>

went through well publicized congressional hearings meant to prevent such activity.<sup>44</sup>

The fact that some record labels were willing to pay those in charge of programming radio stations to promote some records might be taken as evidence that radio play must be beneficial to record sales. Yet that would contradict the evidence on record sales reported in the previous two sections. Is there, in fact, a contradiction?

I think not. Although it seems logical to assume that payola means that radio enhances overall record sales, that conclusion suffers from the fallacy of composition – what may be true for individual observations is not necessarily true for the entire group.

An individual record, particularly if consumers are unfamiliar with the creators, will benefit greatly from airplay. An individual record label will benefit if radio stations tend to focus on broadcasting that label's records. The benefit to that recording or label, however, comes at the expense of other records and other labels since increased play of one record must lead to a decreased play of other records. If radio listening is a substitute for listening to prerecorded music, that substitution will occur regardless of which records are being broadcast, unless listeners feel that the quality of records being played has gone down.

Since radio broadcast of a record generally increases its share of the market it makes sense for labels to try to get their records broadcast. Payola is rational until the marginal benefit from additional payola no longer covers the cost. Radio stations want to maximize their profits, which requires balancing the audience size, which is maximized by playing records that listeners most prefer, against any revenues that might be generated by 'selling' airplay to record labels a la payola. This keeps the radio stations from deviating too far from what listeners would want to hear.

Recordings of the works of well known artists are less likely to need or benefit from payola since radio stations will want to play those records in order to achieve large audiences.<sup>45</sup> It is not unusual for leading stations to be given 'exclusives' over anticipated new recordings for a day or two, although I do not know what the stations 'pay' for this privilege. These are the recordings for which radio stations would be expected to pay large sums for the rights to broadcast if there were property rights in the broadcast of the recording.

It shouldn't be surprising that producers of recordings using little known artists are interested in paying for airtime. This is no different than in many other markets. There are often new entrants into many types of markets and it is not uncommon for new entrants to provide free samples, giveaways, and other devices to try to achieve market share, and that is how payola should be viewed. The media are willing to pay large sums for interviews with major celebrities, whereas minor celebrities are willing to pay to get someone to interview them. It certainly cannot be viewed as indicating that the overall market price of music for performing rights on radio is negative.

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<sup>44</sup>For an in depth history of payola, see Coase (1979). Coase does not directly address the impact of radio on record sales although he does seem to implicitly believe there is a positive linkage. His main interest is to understand the causes of the attempt to ban payola.

<sup>45</sup>Coase (1979) reports that payola was favored by small record labels and that large labels (and music publishers prior to that) had attempted to outlaw activities such as payola for many decades. Coase viewed the ban on payola as anticompetitive.

Even if a majority of recordings were found to have negative prices for broadcast rights, this would not necessarily indicate that the overall market price, which is weighted by transaction size, would be negative. Only a small percentage of recordings are successful, and yet the successful ones dominate the revenue in the industry and would also likely dominate the overall market for market-based performing rights payments.

## 6. CONCLUSIONS

The belief that radio enhances the market for sound recordings seems firmly embedded in current regulatory, commercial, and legal thinking. Yet there appear to be no formal studies examining the relationship between the two markets.

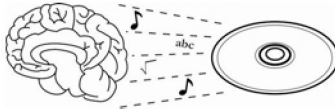
I have examined two episodes in which the impact of radio should be relatively easy to observe. The evidence from this empirical examination indicates that, contrary to common beliefs, radio broadcast does not enhance the market for sound recordings.

Clearly, there is room for additional work. But the evidence seems strong enough, and the intuition supporting the evidence seems compelling enough, that a complete rethinking of the economic relationship between these industries, and the laws, regulations, and decisions having to do with the interaction of these industries, seems appropriate.

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CENTER FOR THE ANALYSIS OF PROPERTY RIGHTS AND INNOVATION

# **Don't Play it Again Sam: Radio Play, Record Sales, and Property Rights**

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CAPRI Publication 06-02

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**SX Ex. 353-RP**

# **Don't Play it Again Sam: Radio Play, Record Sales, and Property Rights**

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**Draft January 5, 2007**

*Abstract:*

This paper undertakes an econometric investigation of the impact of radio play on sales of sound recordings using a sample of American cities. The results indicate that radio play does not have the positive impact on record sales normally attributed to it and instead appears to have an economically important negative impact, implying that overall radio listening is more of a substitute for the purchase of sound recordings than it is a complement. This finding indicates that creating a set of property rights to allow this market to function properly is different than has been suggested by prior research. New technologies affecting radio broadcasts are likely to make this topic increasingly important in the coming years. This research also exposes a fallacy of composition in applying to an entire market a generally accepted positive relationship that holds for individual units.

It is well known that incomplete or missing property rights are likely to lead to wasteful exploitation of resources with their attendant deadweight losses. Coase (1960), of course, taught us that trying to ameliorate such problems through taxes and bounties was not a simple task.

When we think of instances of missing property rights we naturally gravitate toward the well known examples—air and water pollution, wild animals, traffic congestion—found in most economics textbooks. Our concern in this paper is with a case of incomplete property rights associated with a ubiquitous product that the average American uses for approximately three hours per day. That product is broadcast radio.

There are two aspects of the incomplete property rights surrounding the broadcast of recorded music although economists appear to have only been aware of one of them. The missing right recognized by economists is the inability of radio stations to charge owners of sound recordings for the broadcast of those recordings, an activity which is limited by statutes against ‘payola’. Sound recording companies cannot legally pay radio stations to play particular sound recordings unless the stations accede to an onerous requirement of announcing the payment each and every time that sound recording is played. This restriction received extensive publicity in the 1950s when Congress held well-publicized hearings on this issue and this where the pejorative term payola, meant to describe payments from record companies to disk jockeys, was born.<sup>1</sup>

The missing property right that has not heretofore been recognized by economists is the inability of sound recording owners to restrict the broadcast of their sound recordings. Simply put, radio stations can broadcast sound recordings at will, with no permission required from the owners of the

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<sup>1</sup> A reader interested in the tawdry details of payola can consult either Coase (1979) or Caves (2000). Coase provides detailed documentation about the lengthy history of the practice which existed well before the congressional hearings in the 1950s as well as details from the hearings. Caves covers much of the same information but also provides details of Dick Clark as a peerless payola pioneer that readers of a certain generation may find of interest.

sound recordings.<sup>2</sup> Yet the importance of music to these stations is readily revealed by the fact that radio stations are primarily described by the genre of sound recordings that they broadcast, whether it is Classic Rock, Hot Adult Contemporary, or Cool Jazz. There is virtually no economic analysis of this latter property right.

There have been, over the years, numerous news stories written about payola but only a handful of articles written by economists, among them Coase (1979), Sidak and Kronemyer (1987) and Caves (2000). These economists all lament the lack of property rights in this market, but their view of the missing property right is limited to the inability of record labels to directly pay radio stations, in an unfettered manner, for the possibly valuable promotional component of radio broadcast. These authors seem to have neglected the possibility that payments might also be made from radio stations to record companies for the possibly valuable exclusive right to broadcast certain songs that listeners wish to hear. A well-known analogy exists in the television broadcast market where broadcasters must legally acquire the rights to broadcast television programs owned by others and where broadcasters pay large sums for these rights.<sup>3</sup> The neglect of this possibility by previous economic writers may be due to the widely held belief that radio play is so beneficial to record sales that requiring radio stations to obtain permission to broadcast sound recordings would be irrelevant, in the same manner that a property right for goods that are not scarce would serve no useful role.

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<sup>2</sup> Owners of sound recordings in the United States do not have the legal ability to restrict the broadcasts of their sound recordings. In some countries owners of sound recordings have been provided a form of legal ‘compensation’ where radio stations must pay a fee for the use of sound recordings (with rates usually set by law or supervised by some quasi-judicial organization). Nevertheless, owners of sound recordings are not allowed to opt out of the system and engage in direct negotiations with radio stations, so there is no reason to believe that this system in any way approximates a market outcome. In contrast to the sound recording, radio stations in the US pay a “performance right” for the underlying musical compositions on the sound recordings broadcast by radio stations. The legal distinction is that performance rights payments go to composers and their publishers whereas the recording artist and record company do not receive any payments, although recording artists may be the composers and publishers may be owned by sound recording companies.

<sup>3</sup> The radio stations would need to acquire rights to broadcast particular sound recordings, the same way that television stations need permission to broadcast movies or television programs, and radio stations would be allowed to sell their possibly promotional services of broadcasting records on the radio to record companies.

Before we can write off the possibility that such a property right might in fact have a positive market value to radio stations in some circumstances, however, it would seem prudent to examine the impact of radio play on record sales. If radio play exerted a positive impact on overall record sales, consistent with assumptions, creating such a property right might well be superfluous. If radio play diminishes record sales, however, such a right may well be of value. Such a finding wouldn't rule out the possibility that payments might still go mainly from sound recording owners to radio stations, but it would make it far less likely.

While it seems likely that radio broadcasters can have a profound impact on the success of *individual* sound recordings, it does not appear, as Sidak and Kronemyer have commented, that anyone has empirically examined this proposition.<sup>4</sup> Even if radio broadcast does have the promotional impact on individual recordings normally assumed, it may not hold for the overall impact of radio broadcasts on the sound recording industry as a whole. As discussed below, there is a potentially important fallacy of composition in this market. To my knowledge there has been only a single examination of the impact of radio play on the overall market for sound recordings, Liebowitz (2004), which was a largely historical analysis.

The lack of a property right in the broadcast of sound recordings means we cannot discover the value of the right through direct observation. By way of analogy, we know through direct observation that television broadcasters place higher values on the right to broadcast movies than any possible positive value that movie owners might place on possible promotional impacts of television broadcasts (which, admittedly, seem likely to be negative for movie owners in terms of DVD sales).<sup>5</sup> It is easy to

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<sup>4</sup> Sidak and Kronemyer state in their footnote 18: "There appears to be no published study confirming this complementary demand relationship, let alone estimating its empirical magnitude."

<sup>5</sup> Smith and Telang have examine the promotional impact of television broadcast on DVD sales and found it to be positive at the time of the broadcast and shortly afterward although they did not measure the impact on overall future sales. Nor do they examine the impact of television on the entire DVD market (there is ample evidence that the existence of television caused a dramatic decline in overall movie revenues, as found in Liebowitz 2004). Movie



observe that television stations pay positive prices for the rights to broadcast movies, and not vice-versa.<sup>6</sup> If there were a similar market for rights to broadcast music over radio we would know the impact of radio play by direct observation—we could examine whether and how much broadcasters might pay sound recording owners for broadcast rights. But there is no such market to turn to for such observation.

Is there a possibility that at a market based level the majority of the payments could go from radio stations to record companies for the right to broadcast recordings? The results below, where the overall impact of radio play on sound recordings is found to be negative, suggests that such a possibility is real. The currently known payments by sound recording owners to broadcasters might turn out to be similar to slotting fees paid by manufacturers which are common but do not overturn the fact that net monies flow from retailer to manufacturer and not the other way around.<sup>7</sup>

This issue will take on increasing importance in the near future due to a new generation of digital radio receivers—terrestrial, satellite, and Internet based—that are capable of making and storing copies of sound recordings. These receivers alter the typical “streaming” nature of radio, which has historically broadcast songs whose only trace remained in the memory of the listener. The new receivers allow users to automatically record digital songs, providing unlimited playback at the discretion of the user. This technology seems likely to exacerbate any negative impact on record sales from radio play, increasing (or making positive) the market price for the right to broadcast particular sound recordings.

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producers seem to believe that television broadcasts will cannibalize sales and it is hard to imagine that this belief is not correct.

<sup>6</sup> In contrast to record companies, movie owners are able to strictly control whether the station can broadcast the movie, when they can broadcast it, and for what price. Providing geographic exclusivity in these rights to single stations is common. Analyzing the historical reasons for this different set of rights granted to movie owners versus sound recording owners is beyond the scope of this paper, but several possibilities come to mind: 1) there was no copyright on sound recordings until 1971 so there was no right that could be sold and the current situation can be considered a form of grandfathering; 2) the belief that radio was beneficial to sound recording sales implied a zero or negative price; or 3) sound recording firms had less political power vis-à-vis radio broadcasters than did movie owners relative to television broadcasters and thus the sound recording owners were unable to secure for themselves the same set of rights as movie producers.

<sup>7</sup> For more information about slotting fees see Klein and Wright (2007).

There have already been several recent skirmishes between the sound recording and broadcast industries and we can expect more friction as these technologies mature.<sup>8</sup> This would seem, therefore, to be a propitious time to examine the nature of this interaction of radio on sound recordings.

## **I. A Brief History of Radio and Sound Recording**

Radio and sound recordings have largely grown up together, with both industries reaching commercial viability early in the 20<sup>th</sup> century, although sound recordings came first. Thomas Edison is credited with creating the first sound recording in 1877 with a tinfoil recording process. Tinfoil was soon replaced with wax cylinders, leading to a long-forgotten standards battle between cylinders and disks (the disk system, known as the gramophone was developed by Emile Berliner). Just as VHS came later but nevertheless won its battle with Beta, disks came later but eventually won the day.

The first commercial American radio stations went on the air in late 1920. Numerous stations were borne in the next few years and by 1923 the number of stations was over 500, which remained the approximate number for the next fifteen years (Hazlett 1997).<sup>9</sup> In 1926 the penetration rate of radio was approximately 20%.<sup>10</sup> In those days both radio and sound recordings were more the provenance of the middle and upper classes than the lower class and the overall penetration rate of radio most likely severely underestimates the penetration rate of radio in sound recording households.

The market for sound recordings was surprisingly mature by the time of radio's entrance. For example, a magazine devoted to the sound recording industry (Talking Machine World) was established in 1905 and by 1920 monthly issues were averaging 200 pages.<sup>11</sup> Sound recording sales in 1921 were

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<sup>8</sup> I include satellite radio as a species of radio broadcast in this paragraph. An example of this friction can be found in the Washington Post, "Music Labels Sue XM Over Recording Device" Annys Shin, May 17, 2006; Page D01 at <http://www.washingtonpost.com/wp-dyn/content/article/2006/05/16/AR2006051601826.html>

<sup>9</sup> Reported in Figure 1 in Thomas Hazlett, "Physical Scarcity, Rent Seeking, and the First Amendment" *Columbia Law Review*, Vol. 97: 905-944. Hazlett's data are taken from Bureau of the Census.

<sup>10</sup> See Liebowitz (2004).

<sup>11</sup> See <http://www.garlic.com/~tgracyk/tmw.htm>.

more than \$1.1 billion, measured in 2004 dollars, and the population was only slightly more than one third of the current population.<sup>12</sup> To put this value in perspective, constant dollar sales revenue per capita was actually slightly higher in 1920 than in 1950. An overview of the current music market that also touches on several of the issues raised in this paper can be found in Connolly and Krueger (2006).

Liebowitz (2004) examined the historical relationship between record sales and radio play for two periods: the introduction of radio in the US in the 1920s and the introduction of commercial radio in Britain in the latter decades of the 20<sup>th</sup> century. In the first instance record sales fell dramatically after the introduction of radio, and in the second case there was no evidence of a positive relationship between increased radio play of popular music and record sales. The current paper is an attempt to more directly and more precisely measure the current relationship between radio play and sound recordings.

## **II. The Possible Relationships between Radio and Sound Recordings**

It is often claimed that radio has a beneficial impact on sound recording sales. While it is incontrovertible that radio can direct demand to particular songs that receive heavy airplay, the impact on individual songs is quite distinct from the impact on the entire industry, although this distinction has not been generally recognized.

The particular details of the overall impact of radio depend on two competing factors. On the one hand, radio allows users to experience new songs that they may not have previously heard. If this were the primary use of radio by listeners then radio could increase overall record sales. On the other hand, the time spent listening to radio is also capable of being a substitute for the time spent listening to prerecorded music. To the extent that broadcast radio is such a substitute, radio would be expected

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<sup>12</sup> This number comes from correspondence with the Recording Industry Association of America (RIAA) as reported in Liebowitz (2004).

to harm overall record sales. Radio is capable of delivering both impacts and the relative strength of each would determine the overall impact.

### ***A. What can we learn from statistics on music listening?***

The bare statistics on time spent listening to various technological sources of music are informative in and of themselves. The average American spent five times as much time listening to radio per day than listening to traditional sound recordings in 2003, according to the US Statistical abstract.<sup>13</sup> These time-usage values seem incompatible with a hypothesis that radio is used primarily as a means to learn about new music for later purchase, since it would appear infeasible that consumers spend so much more time searching for new music than they spend in the ultimate act of music consumption. These statistics imply that radio is being used largely for its own consumption value.

Certainly, this line of thinking doesn't prove that time spent listening to radio is too long to be pure search, but it illustrates the great likelihood that much and probably most radio listening is a form of consuming music, and if so, radio is likely to be a substitute for the listening to and the purchasing of sound recordings. Understanding the nature of that substitution depends on understanding the nature of music consumption.

### ***B. Music Consumption***

Listening to music is a favorite activity for many individuals. The particular forms of consumption are varied, however, and include attending live performances, listening to CDs (or other sound recording mediums), or listening to radio and television broadcasts. Our focus is on the two major sources of music consumption—broadcast radio and sound recordings. These two music sources

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<sup>13</sup> Radio (including satellite) is listed at 2.75 hours per day and sound recordings at .5 hours per day. See Table 1116 "Media Usage and Consumer Spending for 2003." The ratio was closer to 3:1 in 1999, before file-sharing began. Available at <http://www.census.gov/compendia/statab/tables/06s1116.xls>.

satisfy the music listening craving in different ways and each has certain advantages relative to the other.

Sound recordings provide the highest audio quality and also allow particular songs and performances to be ideally matched to an individual's tastes. Broadcast radio, besides suffering from lower audio quality and less perfectly matched music, also suffers from numerous minutes of advertising. Nevertheless, radio has some advantages over sound recordings—disk jockey patter (which many consumers apparently enjoy); broad playlists which allow the consumer to sit back and let someone else decide what to play (which is presumably more useful than a pure randomizer switch since otherwise radio would just use such a switch); and a much lower price since radio is free whereas the legal consumption of sound recordings requires that they be purchased.

These different characteristics provide different strengths for these two sources in catering to the music listening desires of consumers. We can think of two extremes in a continuum of music listening experiences. On the one hand, an individual might wish to listen to a specific recorded performance or set of performances, which we can refer to as “specific” music consumption. Alternatively, an individual might wish to listen to a random selection of performances from a large library of performances (most likely from a particular genre) which we can refer to as generic or nonspecific music consumption. The two types of listening, which are themselves somewhat substitutable, imply different behavior toward radio and sound recordings.

If specific music consumption is desired the individual will need to access the specific sound recordings of interest, either from his personal collection, those of acquaintances, or more general libraries. Once these sound recordings are in the individual's possession, he can easily and quickly listen to the songs in which he is most interested. Radio, by way of comparison, is not an efficient technology for accessing specific songs. Since a song is considered to be in heavy rotation if it is played twice a day,

an individual would need to spend an inordinate amount of time listening to radio before even one desired song was played, to say nothing of a larger collection of songs (note that this is somewhat less true for satellite radio which sometimes has a station devoted to songs from but a single artist, e.g., the Elvis Presley or Bruce Springsteen stations on Sirius Satellite Radio).

Non-specific music consumption is another matter entirely. Radio is particularly good at catering to this desire, with its playlists and large libraries. Individuals can use their personal libraries to also provide a form of non-specific listening, perhaps by telling their CD or MP3 player to randomize the play of songs, or else choosing the music to listen to in a somewhat haphazard manner. Because sound recordings are not free, the music libraries of individuals are usually quite limited in comparison to that of radio stations. The disadvantages of radio are its lower audio quality and the fact that its collection of music is not as closely tailored to the tastes of individual listeners as their own libraries are likely to be. Nevertheless, the relative usage statistics reported above indicate that the disadvantages of radio are overwhelmed by its advantages for a great majority of individuals.

Note that radio and sound recording are substitutes for non-specific music consumption whereas specific music consumption should be dominated by the use of sound recordings. More importantly, radio broadcasts are clearly a substitute for sound recordings in the case of non-specific music consumption but may well be a complement for sound recordings in the specific music consumption category. This latter result is due to the fact that radio can provide information and therefore influence which specific sound recordings are purchased.

This dichotomy between the impact of radio in specific versus non-specific uses of radio broadcasts leads to the potential fallacy of composition. By focusing on the ability of radio to rearrange the position of songs in an individual's ranking of 'favorites' the analyst would only measure the positive impact of radio on sales of specific songs without capturing the true market impact.

Because radio and sound recordings compete for non-specific music uses, radio usage will have negative impacts on the sales of sound recordings for non-specific music uses, which appears to be by far the larger of the two uses. In the much smaller category of specific music use, radio will clearly influence the selection of sound recordings and may even increase the number of sound recordings sold. By focusing on the latter interaction of these music sources to the exclusion of the former interaction, previous discussion have ignored the potentially negative impact of radio on sound recording sales. We turn now to an empirical investigation of the overall relationship.

### **III. Data**

In order to perform our analysis we need to merge three data sets together: Arbitron data on radio, Nielsen SoundScan data on record sales, and US Census data for market demographics.

The Arbitron radio data are based upon diaries filled out by respondents, similar to Nielsen television diaries. The data are produced several times a year and currently are found in digital form. We were provided access to their data for 1998 and 2003. Arbitron classifies stations by type and also aggregates groups of stations into approximately 275 (269 and 278 in 1998 and 2003 respectively) Metropolitan Survey Areas (known as Metro Areas) based on the areas in which they broadcast. Some rural residents are left out of the surveys. Arbitron data include information on the average time spent listening to radio in its Metro Areas as well as data on the share and genre of each radio station in an area, allowing a calculation to be performed separating the audiences for music radio and talk radio.<sup>14</sup>

Nielsen SoundScan sells data on record sales (full length albums) by geographic area, genre, and by year. Sales data come mainly from bar code scanners at retail outlets. Online sales are included in these numbers, with customer locations mapped to shipping addresses for physical units or credit card

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<sup>14</sup> In 1998 the radio genres which we classified as ‘talk’ were: News, Religion, Sports and Talk. In 2003 the genres had multiplied and changed, and we classified as talk: All News, All Sports, Educational, News Talk Information, Spanish News/Talk, Sports, Talk/Personality, and Religious. Note that Gospel, although religious, is classified as music.

locations for digital downloads. As a factual matter, digital downloads played virtually no role in the analysis since they were a trivial component of the market even as late as 2003. Nielsen aggregates sales by Designated Market Areas (DMAs) of which there are 210 in the US and everyone in the United States is included in a DMA. We purchased data for the largest 100 largest DMAs which includes approximately 83% of the total population. As we will see below, smaller DMAs provide less reliable data.

The US Census, as part of its Current Population Survey (CPS) undertaken for the Bureau of Labor Statistics, conducts irregular surveys on Internet and Computer use. We use these Census surveys since we wish to control for the important impact of file-sharing on record sales. There was a survey in December of 1998 and another in October of 2003 and these are the two used in the analysis.<sup>15</sup> The surveys provide information on demographic variables such as average household income, age distribution by area, minority share of population, breakdown by gender, internet use, type of internet connection, as well as a host of other variables not used in the analysis. The geographic areas used in the Census are known as Metropolitan Statistical Areas (MSAs) and there are 241 of these areas in our data. As is the case with Arbitron Metro Areas, these MSAs do not include rural residents.<sup>16</sup> Census data are based on responses from individuals to survey questions. The size of the census survey sample (approximately 130,000 nationally) in small MSAs is sometimes insufficient to provide accurate estimates for various demographic data. We try to take account of this problem in the analysis. Arbitron Metro Areas normally correspond to Census MSAs although they are not identical to them.<sup>17</sup>

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<sup>15</sup> The control for file-sharing requires that the start date occur prior to file-sharing (1999) and that only one other year be used. For details see Liebowitz (2006).

<sup>16</sup> The Census Data also include PMSAs (primary metropolitan statistical areas) and CMSAs (consolidated metropolitan statistical areas) which are entire or parts of more heavily populated MSAs.

<sup>17</sup> Arbitron states: "Arbitron Metros generally correspond to the Metropolitan Statistical Areas (MSAs, PMSAs, CMSAs) defined by the U.S. Government's Office of Management and Budget. They are subject to exceptions dictated by historical industry usage and other marketing considerations as determined by Arbitron." See page 8.2 of Arbitron Radio Market Report Reference Guide, 2002.



Combining these data sets is not a trivial task. Since Nielsen DMAs are the largest areas and represent larger populations than Census MSAs or Arbitron Metro Areas (even when they all have the same name) we aggregated the MSAs and Metro Areas to match the Nielsen DMAs. This often required adding several MSAs (or Metro Areas) together to approximate the DMA. Arbitron provides a guide to link its Metro areas to the Nielsen DMAs, although the resulting matches are sometimes far from perfect. Matching the Census MSAs to the Nielsen DMAs was based upon examining Nielsen DMA maps (which show the counties belonging to a DMA) and determining which DMA an MSA belonged to based on the county containing the MSA.

The ‘matched’ Metro Areas and Census MSAs sometimes contained only a small portion of the DMA population, particularly for the DMAs with smaller populations and more rural characteristics. This is because rural households in DMAs are often excluded from Metro Areas and MSAs. For that reason we constructed a variable, “Coverage”, which measures the portion of the DMA population replicated by the aggregated MSAs or Metro Areas.<sup>18</sup> When Coverage falls to a low level it is possible that the Census or Arbitron variables, based as they are on MSAs which make up only a small percentage of the DMA population, will not properly reflect the actual population characteristics in the DMA. In the analysis that follows the sample will sometimes be restricted to observations where the Coverage is greater than 60% or 75%, in order to eliminate the influence of potentially misleading measurements.

Although the data from Nielsen SoundScan cover 100 DMAs, one DMA could not be matched with any census MSAs and was dropped from the analysis. Further, missing data for radio listenership

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<sup>18</sup> Coverage ratios were calculated for each DMA for both Arbitron and Census data and the lowest ratio for either Arbitron or Census data is used for each DMA. One difficulty in constructing these ratios was that Nielsen populations were based on individuals over the age of 2 whereas Arbitron populations were based on individuals over the age of 12. This required that we used Arbitron listed DMA populations when calculating the Arbitron coverage ratios.

removed another three or four DMAs, depending on year and whether radio was measured as total radio audience or music radio audience.

| Table 1: 2003 Values    |     |         |           |         |          |              |        |
|-------------------------|-----|---------|-----------|---------|----------|--------------|--------|
| Variable                | Obs | Mean    | Std. Dev. | Min     | Max      | pop weighted | Rural  |
| College Degree          | 99  | 0.204   | 0.051     | 0.087   | 0.345    | 0.216        | 0.139  |
| Coverage                | 99  | 0.683   | 0.206     | 0.203   | 0.977    | 0.828        |        |
| DMA Population (00,000) | 99  | 23.505  | 27.275    | 6.308   | 194.212  | 54.835       |        |
| Household Income (000)  | 99  | 47.966  | 8.986     | 20.380  | 75.895   | 50.540       | 38.255 |
| Males                   | 99  | 0.480   | 0.023     | 0.400   | 0.520    | 0.482        | 0.484  |
| Minority                | 95  | 0.220   | 0.138     | 0.024   | 0.665    | 0.269        | 0.293  |
| Number Radio Stations   | 95  | 22.017  | 4.991     | 12.287  | 38.109   | 25.304       |        |
| Old (55+)               | 99  | 0.227   | 0.054     | 0.130   | 0.410    | 0.215        | 0.250  |
| Share Internet          | 99  | 0.613   | 0.071     | 0.440   | 0.740    | 0.621        | 0.545  |
| Radio Usage (hrs/day)   | 96  | 2.711   | 0.161     | 2.371   | 3.233    | 2.769        |        |
| Music Radio Usage       | 96  | 2.298   | 0.190     | 1.861   | 2.976    | 2.293        |        |
| Talk Radio Usage        | 95  | 0.417   | 0.138     | 0.190   | 0.750    | 0.476        |        |
| Record Sales per capita | 99  | 2.321   | 0.440     | 1.499   | 3.879    | 2.445        | 1.837  |
| Calculated Weights      | 99  | 651.593 | 545.538   | 17.108  | 2664.062 |              |        |
| Young (12-29)           | 99  | 0.303   | 0.044     | 0.200   | 0.410    | 0.306        | 0.288  |
| 98-2003                 |     |         |           |         |          |              |        |
| Change in Variable      | Obs | Mean    | Std. Dev. | Min     | Max      |              |        |
| College Degree          | 99  | 0.018   | 0.040     | -0.114  | 0.208    |              |        |
| DMA Population (00000)  | 99  | 1.643   | 2.361     | -0.559  | 13.845   |              |        |
| Household Income (000)  | 99  | 8.523   | 7.087     | -6.660  | 26.901   |              |        |
| Males                   | 99  | 0.001   | 0.035     | -0.137  | 0.143    |              |        |
| Minority                | 93  | 0.019   | 0.054     | -0.115  | 0.186    |              |        |
| Number Radio Stations   | 96  | 2.172   | 7.311     | -11.404 | 65.000   |              |        |
| Old (55+)               | 99  | 0.011   | 0.047     | -0.120  | 0.191    |              |        |
| Radio Usage             | 95  | -0.294  | 0.104     | -0.600  | -0.050   |              |        |
| Music Radio Usage       | 95  | -0.323  | 0.123     | -0.623  | -0.036   |              |        |
| Talk Radio Usage        | 95  | 0.029   | 0.092     | -0.227  | 0.351    |              |        |
| Record Sales per capita | 99  | -0.577  | 0.695     | -3.484  | 1.049    |              |        |
| Share Internet          | 99  | 0.310   | 0.058     | 0.120   | 0.466    |              |        |
| Young (12-29)           | 99  | 0.001   | 0.045     | -0.110  | 0.140    |              |        |

Table 1 presents summary statistics for 2003 and for the change from 1998 to 2003, allowing the reader to infer the 1998 statistics if desired. A person in the average DMA spent 2.3 hours per day listening to music radio and 2.71 hours a day listening to all radio. Sales of full length sound recording albums averaged 2.32 per person per year across DMAs, somewhat less than the average weighted by

population. The combined coverage ratio in the average DMA was 68.3% and the DMA with the lowest values was about 20%, which would be a cause for concern if these observations were accorded much weight in the analyses. The national (weighted) coverage ratio was a more reassuring 82.8%, however. Small cities tend to have lower coverage ratios (the correlation between DMA size and coverage is .44).

As mentioned, the population of the top 100 DMAs represents about 83% of the national population. The MSA (Metro Area) population matched to the DMAs covers about 87% (79%) of the DMA population, so that in total our sample covers about 72% (66%) of the US population. How does the population left out of MSAs compare to the included population? Being more rural, the left out population would be expected to be poorer, have lower Internet usage, and lower education. This expectation is confirmed in the rightmost column of Table 1 where we see that left out individuals have lower Internet use, a smaller share of college degrees, lower incomes, and lower per capita record sales than the included population.

#### **IV. Estimation**

Our goal is to determine the impact of radio play on record sales. Our null hypothesis will be that radio increases record sales since that conclusion seems to have been accepted by almost everyone. All of our variables are measured as the per capita value in a city. The dependent variable will be record sales per capita. The key independent variable will be the average time spent listening to music radio. Demographic variables that are likely to influence record sales include income, Internet use, possession of college degree, relative size of age groups (over 55 and 12 through 29), and minority population (black and Hispanic).

We have data for 1998 and 2003. Having data for more than one year allows panel methods to be used and this will be our preferred methodology. The appendix present results from the single-year cross section regressions which provide similar results.

### ***A. Radio Play and Record Sales***

Table 2 presents results from running regressions using first differences. By taking first differences we control for underlying differences in the populations and circumstances of cities that do not change over this period and for which we do not have controls, in a manner identical to a fixed effects model.

The table includes regression results over the full 1998-2003 interval where all the variables are in first differences, except for the measurement of Internet usage which will be explained shortly. The dependent variable is the change in albums sold per capita. The various specifications in Table 2 differ from one another as we stratify the observations by coverage ratio and population in order to remove from the analysis observations likely to be less precisely measured.

The first column includes the full sample although these results are most vulnerable to poor measurements and are included more for the sake of completeness than for any information revealed. The second column weights each observation by a combination of population and coverage, so that larger cities are more heavily weighted and cities with greater coverage are more heavily weighted, with the weighting constructed to give approximately equal impact to population and coverage.<sup>19</sup> The purpose of this weighting was to reduce the impact of observations with likely mismeasurement due to low coverage or possible imprecision in the Census numbers due to the sample size being too small to provide reliable statistics. The weighting here is quite severe, with the variation from the highest to lowest weight on the order of over one hundred to one (as can be seen in Table 1). The next two

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<sup>19</sup> The weighting was constructed taking the product of the squared coverage and the square root of the population.

columns eliminate observations (giving them a zero weight) when the coverage is less than either 60% or 75%. These cutoffs were chosen as fairly natural indicators of good if not great coverage and more demanding cutoffs would have lowered the number of observations further than deemed prudent, although we will explore the impact of choosing different cutoffs later in the paper. Columns 5 and 6 add in a cutoff for population as well as coverage.

| Table 2: First Differences Regression on Change in Album Sales  |                          |                           |                           |                           |                           |                           |
|---|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Change in   | Full Sample              | Pop & Cov Wgt             | Coverage >.6              | Coverage >.75             | Cov >.6; pop>.6M          | Cov >.75; pop>.6M         |
| Daily Per Capita Music Radio (Hours)  | -0.0745<br>(0.462)       | -0.7903<br><b>(0.076)</b> | -0.7507<br>(0.169)        | -1.1817<br>(0.126)        | -0.6049<br><b>(0.067)</b> | -0.7767<br><b>(0.056)</b> |
| Average Household Income (000s)   | 0.0087<br>(0.362)        | 0.0227<br><b>(0.025)</b>  | 0.0299<br><b>(0.047)</b>  | 0.0368<br><b>(0.086)</b>  | 0.0148<br>(0.118)         | 0.0220<br><b>(0.034)</b>  |
| 2003 Internet Access  | -1.5582<br>(0.185)       | -2.7630<br><b>(0.012)</b> | -3.4950<br><b>(0.043)</b> | -4.5426<br><b>(0.062)</b> | -2.7686<br><b>(0.003)</b> | -2.5656<br><b>(0.014)</b> |
| BA Degree or above  | 3.1199<br>(0.162)        | 4.0142<br>(0.172)         | 6.2029<br><b>(0.081)</b>  | 9.0215<br><b>(0.080)</b>  | -3.2295<br>(0.188)        | 0.3713<br>(0.863)         |
| Share 12-29   | 5.3332<br><b>(0.077)</b> | 5.2812<br><b>(0.094)</b>  | 9.0277<br><b>(0.022)</b>  | 8.2210<br>(0.108)         | 0.6868<br>(0.792)         | 0.8054<br>(0.676)         |
| Share Males   | -0.8486<br>(0.721)       | -2.4070<br>(0.329)        | -4.6742<br>(0.159)        | -4.9393<br>(0.196)        | 1.1555<br>(0.452)         | -0.4517<br>(0.774)        |
| Share 55+   | 1.3197<br>(0.568)        | 1.1857<br>(0.581)         | 4.9417<br>(0.144)         | 1.0563<br>(0.784)         | -0.5910<br>(0.775)        | -1.2845<br>(0.413)        |
| Share Minority  | -1.0790<br>(0.475)       | -0.2796<br>(0.844)        | 0.4427<br>(0.806)         | -0.9315<br>(0.700)        | 0.6420<br>(0.675)         | -0.4186<br>(0.744)        |
| DMA Population (%)  | -0.3810<br>(0.684)       | -0.3324<br>(0.668)        | -0.4518<br>(0.663)        | 0.0504<br>(0.973)         | -0.8576<br>(0.154)        | -0.4557<br>(0.428)        |
| Constant  | 0.2827<br>(0.719)        | 0.6820<br>(0.308)         | 0.9922<br>(0.342)         | 1.4393<br>(0.326)         | 1.0931<br><b>(0.050)</b>  | 0.7715<br>(0.145)         |
| Observations  | 90                       | 90                        | 61                        | 41                        | 53                        | 36                        |
| R-squared   | 0.14                     | 0.20                      | 0.33                      | 0.37                      | 0.25                      | 0.36                      |
| Robust p values in parentheses; p value for music radio is for one tail test; bold is sig at 10% level; bold underlined at 5%, bold double underline 1% |                          |                           |                           |                           |                           |                           |

Our primary interest is in the coefficients on music radio use. The coefficients are always negative and (excluding the full sample) imply that radio play causes a substantial decrease in the sales of CDs. The coefficients are generally at or near the border of statistical significance if we include 10% as a cutoff. The average coefficient (excluding the full sample) is -.82 but we will round this value down to -.75 in the illustrations below because when the impact of outliers is reduced the average coefficient

falls to  $-.68$ .<sup>20</sup> This economic significance of these coefficients tells us that a one-hour increase in usage of music radio, which is somewhat less than one half of the average value, would lead to a decline of  $.75$  sound recordings. Although the confidence intervals around these coefficients are wider than we might like, the implied impact of radio indicates an important economic impact of radio play on record sales since the yearly per capita purchases of sound recordings is about  $2.7$  over the five year interval. If this coefficient could be applied to the entire range of radio usage, and we will have more to say about this below, the decline in record sales would be very large relative to actual sales. These results are certainly strongly contrary to the normal expectation of a strongly positive impact of radio play on record sales.

Income is always positive, as expected, and usually significant. An increase in household income of  $\$10,000$  would lift sound recording sales by approximately  $.25$  units. DMA population has no clear impact on sales.

The Internet variable requires some additional explanation. In the period from 1998 until 2003 file-sharing arose from nothing to become a very popular activity. Liebowitz (2006a) demonstrates that a correct specification for a regression measuring the impact of file-sharing, if file-sharing was zero in the beginning period, would be to use the *level* of Internet use in the later period in an otherwise first differenced regressions. As was the case in that paper, the Internet variable in Table 2 indicates a very strong negative impact of file sharing on record sales, which is consistent with most other studies of the subject (see for example, Liebowitz 2006, Rob and Waldfogel 2006, and Zentner 2006). The impact of file-sharing is less than this coefficient, however, because Internet usage itself can be something of a

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<sup>20</sup> I used the built in RREG Stata routine to determine whether weakening the impact of influential observations would change the results. Although the coefficients were slightly lower, the average p values were slightly stronger ( $.08$  versus  $.10$ ). The RREG routine first eliminates observations with levels of Cook's D that are above 1 and then it iteratively lowers the weightings of observations with large absolute residuals, until a convergence threshold is reached.

substitute for listening to sound recordings as described in Liebowitz (2006a), which controls for this factor and concludes that file-sharing still has a large negative impact on record sales.

The share of the population with college degrees appears to have a positive impact on record sales until small cities are removed. It is also the case that when outliers are made less influential this variable loses its strength. The minority and age group variables do not have much consistency. The coefficient on share of individuals aged 12-29 appears to have a positive impact on record sales, but as was the case with the college variable, the result goes away when small cities are removed or when robustness checks (for outliers) are performed.

| Table 3: Concise Regressors on Change in Album Sales  |                           |                           |                           |                           |                           |                           |
|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|   | Pop & Cov Wgt             | cov>.6                    | cov>.75                   | cov >.6 pop>.6M           | cov >.75 pop>.6 M         | Avg                       |
| <b>First Differences</b>  |                           |                           |                           |                           |                           |                           |
| Daily Per Capita Music Radio (Hours)  | -0.8091<br><b>(0.065)</b> | -1.2560<br><b>(0.069)</b> | -1.5237<br>(0.101)        | -0.6347<br><b>(0.033)</b> | -0.6931<br><b>(0.019)</b> | -0.9833<br><b>(0.057)</b> |
| Average Household Income (000s)   | 0.0177<br><b>(0.033)</b>  | 0.0194<br><b>(0.079)</b>  | 0.0347<br><b>(0.044)</b>  | 0.0084<br>(0.320)         | 0.0201<br><b>(0.009)</b>  | 0.0200<br><b>(0.097)</b>  |
| 2003 Internet Access  | -2.1177<br><b>(0.026)</b> | -2.9273<br><b>(0.053)</b> | -4.2516<br><b>(0.073)</b> | -2.4070<br><b>(0.005)</b> | -2.2478<br><b>(0.018)</b> | -2.7903<br><b>(0.035)</b> |
| Observations  | 95                        | 61                        | 41                        | 53                        | 36                        |                           |
| R-squared   | 0.076                     | 0.074                     | 0.137                     | 0.147                     | 0.284                     |                           |
| <b>Robust Regressions</b>   |                           |                           |                           |                           |                           |                           |
| Daily Per Capita Music Radio (Hours)  |                           | -0.7562<br><b>(0.019)</b> | -0.7493<br><b>(0.035)</b> | -0.7066<br><b>(0.028)</b> | -0.6614<br><b>(0.055)</b> | -0.7184<br><b>(0.034)</b> |
| Average Household Income (000s)   |                           | 0.0128<br><b>(0.065)</b>  | 0.0146<br><b>(0.079)</b>  | 0.0142<br><b>(0.047)</b>  | 0.0187<br><b>(0.024)</b>  | 0.0150<br><b>(0.054)</b>  |
| 2003 Internet Access  |                           | -1.9139<br><b>(0.009)</b> | -1.7411<br><b>(0.043)</b> | -2.1668<br><b>(0.003)</b> | -2.0606<br><b>(0.015)</b> | -1.9706<br><b>(0.018)</b> |
| Observations  |                           | 61                        | 41                        | 53                        | 36                        |                           |
| R-squared   |                           | 0.163                     | 0.169                     | 0.205                     | 0.232                     |                           |
| Robust p values in parentheses; p value for music radio is for one tail test; bold is sig at 10% level; bold underlined at 5%, bold double underline 1%; Constant term not shown. |                           |                           |                           |                           |                           |                           |

Due to the relatively small number of observations it is important to try to maximize the efficiency of the estimates. To this end the regressions were rerun using only the variables that appear to actually have consistent and significant impacts—music radio use, Internet use, and income. The

results are found in Table 3. The top half of that table provides the first differenced OLS regression coefficients. The general results are similar but generally stronger than in Table 2. The coefficient on music radio is somewhat larger, averaging -.98 with an average p value slightly below .06. The bottom half of the table provides the results from the robust regressions using Stata's RREG routine to weaken the impact of influential observations.<sup>21</sup> With these regressions the music radio coefficient is about the same as in Table 2 but the confidence interval is narrower.<sup>22</sup>

### ***B. The Nature of the Substitution***

We have found that, contrary to received wisdom, increases in time spent listening to music radio do not increase the purchase of sound recordings but instead appear to decrease the sale of sound recordings by an economically large amount. There are two possible explanations for a negative impact. One explanation might be that the time spent listening to radio is time that is taken away from other general entertainment activities and that listening to sound recordings is just one of these activities. The other explanation, which is the one that has been put forward in this paper, is that listening to *music* radio is a substitute for non-specific music listening that might otherwise have used sound recordings.

Fortunately, it is fairly easy to test between these two possibilities. Not only do we have a measure of time spent listening to music radio but we also have a measurement of the time spent listening to talk radio. If the former hypothesis were true, talk radio would have the same impact on record sales as does music radio since time would be the key element of substitution and an hour of talk radio takes as much time as an hour of music radio. If the latter hypothesis were true music radio would have a more powerfully negative impact on sound recording sales than would talk radio.

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<sup>21</sup> Stata's RREG routine doesn't allow weighted regressions so the first column is blank.

<sup>22</sup> Although the robust regressions were not shown for Table 2, the average coefficient was .684 and the average p value was .079



Table 4 presents the partial (income and Internet coefficients are not shown) results of concise regressions which include both talk and music radio in regressions otherwise identical to Table 3. The coefficients on talk radio, although generally positive, have large confidence intervals. Certainly, talk radio does not appear to have the same impact or sign as music radio.

| Table 4: Concise Regression with two types of Radio Station   |                    |                           |                    |                           |                    |                    |
|---|--------------------|---------------------------|--------------------|---------------------------|--------------------|--------------------|
|   | Pop & Cov Wgt      | cov>.6                    | cov>.75            | cov >.6 pop>.6M           | cov >.75 pop>.6 M  | Avg                |
| Daily Per Capita Music Radio (Hours)  | -0.6238<br>(0.126) | -1.1435<br><b>(0.082)</b> | -0.4070<br>(0.364) | -0.8487<br><b>(0.017)</b> | -0.6004<br>(0.113) | -0.7247<br>(0.140) |
| Daily Per Capita Talk Radio (Hours)   | 0.3996<br>(0.598)  | 0.2398<br>(0.842)         | 1.9753<br>(0.212)  | -0.5094<br>(0.319)        | 0.1904<br>(0.735)  | 0.4591<br>(0.541)  |
| Observations  | 95                 | 61                        | 41                 | 53                        | 36                 |                    |
| R-squared   | 0.08               | 0.08                      | 0.17               | 0.16                      | 0.29               |                    |
| Test for Equality of coefficients (p-val)   | (0.182)            | (0.266)                   | (0.120)            | (0.437)                   | <b>(0.036)</b>     |                    |
| Coefficients for Income and File-sharing Proxy not shown; Robust p values in parentheses; p value for music radio is for one tail test; bold is sig at 10% level; bold underlined at 5%, bold double underline 1% |                    |                           |                    |                           |                    |                    |

Because the confidence interval around talk radio is so wide we can only reject equivalence of the two coefficients for one regression specification; the other specifications have p-values ranging from .12 to .44 when the equivalence of the coefficients are tested. Nevertheless, the impact of talk radio certainly appears to be different than music radio and in a manner consistent with expectations. Our conclusion, therefore, is that music radio is a direct substitute for sound recordings independent of the time taken listening to radio. This is really not much of a surprise.

## V. Further Checks

### A. Outliers and Cutoffs

One possible issue is the impact of outliers. In all instances, beyond those mentioned in the text, the robust regression technique built into Stata were examined and the results were in close agreement

with those presented in the text. The DfBetas for the radio coefficient were also examined and there is no evidence that the results presented are due to a small number of influential observations.

It is also possible that the cutoff points chosen may have inadvertently impacted the results relative to other possible cutoff values. Examining other cutoff values (based on the concise regression specification), as shown in Table 5, reveals that the cutoff values chosen did not lead to unusual results. [Note that as some cutoff values change the number of included observations may not change.] An examination of p-values, found in the bottom half of Table 5, also reveals that the chosen cutoff points in the main text do not provide unusual results.

| Table 5: Music Radio Coefficients (and p-values) for Different Cutoff Values |                 |                 |                 |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Pop \ Cov  | 0.5             | 0.550           | 0.6             | 0.650           | 0.7             | 0.750           | 0.8             | Average         |
| none   | -0.9572         | -1.1719         | -1.2560         | -1.4040         | -1.4725         | -1.5237         | -2.0500         | -1.4050         |
| 400,000  | -0.9289         | -1.0739         | -1.1722         | -1.4040         | -1.4725         | -1.5237         | -2.0500         | -1.3750         |
| 500,000  | -0.9517         | -1.0974         | -1.2012         | -1.4414         | -1.5140         | -1.6070         | -2.1453         | -1.4226         |
| 600,000  | -0.4671         | -0.5597         | -0.6347         | -0.8320         | -0.7323         | -0.6931         | -0.6219         | -0.6487         |
| 700,000  | -0.4632         | -0.5597         | -0.6347         | -0.8320         | -0.7323         | -0.6931         | -0.6219         | -0.6481         |
| 800,000  | -0.3684         | -0.4496         | -0.5162         | -0.6963         | -0.6993         | -0.6296         | -0.5314         | -0.5558         |
| Average  | -0.6894         | -0.8187         | -0.9025         | -1.1016         | -1.1038         | -1.1117         | -1.3368         | -1.00921        |
| p values   |                 |                 |                 |                 |                 |                 |                 |                 |
| Pop \ Cov  | 0.5             | 0.550           | 0.6             | 0.650           | 0.7             | 0.750           | 0.8             | Average         |
| none   | <b>(0.0945)</b> | <b>(0.0805)</b> | <b>(0.0690)</b> | <b>(0.0555)</b> | (0.1005)        | (0.1005)        | <b>(0.0615)</b> | <b>(0.0803)</b> |
| 400,000  | (0.1140)        | (0.1020)        | <b>(0.0860)</b> | <b>(0.0555)</b> | (0.1005)        | (0.1005)        | <b>(0.0615)</b> | <b>(0.0886)</b> |
| 500,000  | (0.1120)        | (0.1020)        | <b>(0.0855)</b> | <b>(0.0550)</b> | <b>(0.1000)</b> | <b>(0.0955)</b> | <b>(0.0590)</b> | <b>(0.0870)</b> |
| 600,000  | <b>(0.0700)</b> | <b>(0.0530)</b> | <b>(0.0325)</b> | <b>(0.0050)</b> | <b>(0.0265)</b> | <b>(0.0185)</b> | <b>(0.0635)</b> | <b>(0.0384)</b> |
| 700,000  | <b>(0.0735)</b> | <b>(0.0530)</b> | <b>(0.0325)</b> | <b>(0.0050)</b> | <b>(0.0265)</b> | <b>(0.0185)</b> | <b>(0.0635)</b> | <b>(0.0389)</b> |
| 800,000  | (0.1210)        | <b>(0.0965)</b> | <b>(0.0645)</b> | <b>(0.0125)</b> | <b>(0.0260)</b> | <b>(0.0240)</b> | <b>(0.0915)</b> | <b>(0.0623)</b> |
| Average  | <b>(0.0975)</b> | <b>(0.0812)</b> | <b>(0.0617)</b> | <b>(0.0314)</b> | <b>(0.0633)</b> | <b>(0.0596)</b> | <b>(0.0668)</b> | <b>(0.0659)</b> |

### ***B. Simultaneity***

Finally, another potential problem with the estimation is the possibility of simultaneity. We have examined the role of radio broadcasts on the sales of sound recordings. The argument might be made that the sales of sound recordings have an impact on radio listening just as radio has an impact on sound recording sales. After all, they are substitutes for each other when individuals want to listen to

non-specific music. Could the amount of time individuals spend listening to radio depend on the number of sound recordings that they purchase?

Although a linkage is clearly possible, there are reasons to doubt the importance of sound recording purchases on time spent listening to radio. First, the number of sound recordings available is the stock of owned recordings which is likely to be much larger than the flow of purchases, so the current flow might be at most only weakly related to the number of purchases unless the stock of older CDs depreciates rapidly over time. Second, for specific music consumption, sound recordings are the much preferred solution and radio will not be much of a substitute. Sound recording purchases intended mainly for specific listening (which might be the main use of sound recording purchases) should not, therefore, impact time spent listening to radio.

It is also useful to consider factors that might change the number of sound recordings purchased and the impact on radio listening. One very important factor during this period is file-sharing, and to this we should add instances of non-Internet based sharing, such as ripping borrowed CDs. Although we have a variable for internet based file-sharing, it might not pick up all of the impact of borrowed or pirated music. If it did not, individuals would decrease their purchase of sound recordings and at the same time likely decrease their listening to radio since they can now have a very large free library of music to which they can listen. In this case, a reduction in record sales would be associated with a decrease in radio listening, not an increase.

Nevertheless, we can perform a test to determine whether there is evidence of simultaneity or not. The test is a form of Hausman specification test in which we regress radio music listening on a set of exogenous variables, calculate the residuals, and then include those residuals in the regression on record sales. In this case the exogenous variables include all the demographic variables used in the above regressions plus, for the regression on radio music listening, changes in both the number of radio

stations and time spent listening to talk radio, each of which should be independent of the possible music-radio/sound-recording tradeoff. Table 6 reports the coefficients on the variable consisting of the first stage residuals for our various combinations of cutoff, which are insignificant with all cutoff values.

|             | Pop & Cov Wgt | cov>.6  | cov>.75 | cov >.6 pop>.6M | cov >.75 pop>.6 M |
|-------------|---------------|---------|---------|-----------------|-------------------|
| coefficient | 0.2619        | 0.1648  | 1.0382  | -0.7221         | 0.2765            |
| p value     | (0.812)       | (0.928) | (0.654) | (0.539)         | (0.784)           |

The conclusion that would be drawn from this is that there is no simultaneity problem to worry about. Nevertheless, this test cannot be considered conclusive so we proceed to use instrumental variables in order to more fully expunge the possibility of simultaneity. We should keep in mind that because we have a fairly small sample size, instrumental variables, which provide biased and inefficient estimates, may not provide better estimates than OLS.

Equation (1) represents the equation that we have been estimating with OLS up to this point. Equation (2) represents a structural equation explaining music radio usage. The two new variables in this equation are the number of radio stations (Stations) and the amount of time that individuals spend listening to talk radio (RadioTalk).

$$(1) \text{ Albums} = a_0 + a_1 \text{ RadM} + a_2 \text{ Inc} + a_3 \text{ BA} + a_4 \text{ Yng} + a_5 \text{ Male} + a_6 \text{ Old} + a_7 \text{ Int} + a_8 \text{ Minority} + a_9 \text{ Pop}$$

$$(2) \text{ RadM} = b_0 + b_1 \text{ Albums} + b_2 \text{ Stations} + b_3 \text{ RadioTalk}$$

Listening to talk radio fulfills a very different taste than does listening to sound recordings and should not be a substitute for listening to sound recordings, at least no more than any other activity that takes up time. Further, we have already seen that the time spent listening to talk radio does not impact

the number of albums sold. If talk radio is independent of album sales, it should be uncorrelated with the error term in the regression on Albums.

Our other instrument is the average number of stations in a DMA, which is a construct based on the average number of stations found in Arbitron metro areas weighted by the populations of the metro areas in a DMA and as such doesn't relate directly to any particular set of physical stations since a single station can appear in more than one metro area.<sup>23</sup> We expect this count of stations to be independent of record sales except through its impact on the radio music-use variable. The number of stations is determined in part by regulations since radio stations need government permission to broadcast. The number of stations is likely to impact the variety of programming and might allow listeners to find programming closer to their tastes, impacting the time spent listening to music radio, but there does not appear to be any other mechanism by which the number of stations would impact the sales of albums.

Our procedure will be to instrument for RadM in equation (1) with the fitted values of RadM from equation (3) that includes all the other exogenous variables that are found in equation (1) and the two instruments where X1...X8 is a vector representing variables 2-9 in equation (1).

$$(3) \text{ RadM} = c_0 + \begin{matrix} | & X1 & | \\ | & \cdot & | \\ c_1 \dots\dots\dots c_8 & | & \cdot & | \\ | & X8 & | \end{matrix} + c_9 \text{Stations} + c_{10} \text{RadioTalk}$$

The results of the second stage regression coefficients for radio music are found in Table 7. As a byproduct of using instrumental variables, the standard errors on radio music are larger than is the case for OLS which can explain why the coefficient is more variable than when using OLS and in one

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<sup>23</sup> Not all stations in a metro area were counted. If a station was listed as having an audience rating (percentage of audience) of zero, it was excluded from the analysis. This is similar to Arbitron's listings which include stations only if they have a measurable presence, although they do not base it on ratings points but instead on audience size.

instance is even positive. Nevertheless, the average coefficient is about the same as before (-.826) which further supports the view that there is no evidence that the OLS estimates are impacted by simultaneity.

| Table 7: Second stage IV estimates of change in sound recording sales  |               |               |                |                  |                   |
|--|---------------|---------------|----------------|------------------|-------------------|
|  | Pop & Cov Wgt | Coverage >.60 | Coverage >.75  | Cov >.6; pop>.6M | Cov >.75; pop>.6M |
| radio music change in hours*   | -0.9375       | -0.9658       | -2.2727        | 0.4015           | -0.6441           |
| p values (one tail)  | (0.177)       | (0.256)       | <b>(0.021)</b> | (0.301)          | <b>(0.100)</b>    |
| Sargan [non heteroskedastic-robust] Instrument validity; P-value   | 0.4303        | 0.4193        | 0.4112         | 0.7297           | 0.659             |
| Hansen J Statistic on instrument validity [hetero robust Sargan]; P-val  | 0.2178        | 0.1278        | 0.1044         | 0.5537           | 0.4436            |
| Heteroskedastic robust [quasi-Hausman] exogeneity test; Chi-sq p value for RadM  | 0.931         | 0.7223        | 0.5618         | 0.2698           | 0.9549            |
| Anderson Canon Corr Underidentification LR test; p value   | 0.0000        | 0.0000        | 0.0001         | 0.0008           | 0.0004            |
| Partial First Stage Results; Music Radio is dependent variable   |               |               |                |                  |                   |
| station count change   | 0.0025        | 0.0025        | 0.0023         | 0.0022           | 0.0024            |
|  | <b>0.000</b>  | <b>0.000</b>  | <b>(0.001)</b> | <b>(0.004)</b>   | <b>(0.002)</b>    |
| radtalkchg   | -0.6657       | -0.5962       | -0.6768        | -0.5600          | -0.6778           |
|  | <b>0.000</b>  | <b>0.000</b>  | <b>0.000</b>   | <b>0.000</b>     | <b>0.000</b>      |
| Observations   | 90            | 61            | 41             | 53               | 36                |
| R-squared  | 0.537         | 0.486         | 0.642          | 0.476            | 0.626             |
| Robust p values in parentheses; *=instrumented variable; bold is sig at 10% level; bold underlined at 5%, bold double underline 1% |               |               |                |                  |                   |

The Sargan test for instrumental validity implies that our instruments are likely to be valid and not related to the error term. The Hansen J Statistic, which differs from Sargan in that it is robust in the face of heteroskedasticity, provides a less sanguine answer to the same question although it too suggests, but more weakly, that the instruments are valid. A test similar to the simultaneity test reported in Table 6 but robust to heteroskedasticity leads to the same conclusion as before—there is no evidence that music radio is endogenous and thus no need for instrumental variables to begin with. Finally, the Anderson canonical correlation likelihood ratio test tells us that the instruments identify the equation. The bottom of Table 7 provides some coefficients and other results from the first stage regressions

where it is easy to see that the two variables used as instruments are highly correlated with changes in music radio usage.

We conclude that simultaneity is not a problem for the OLS results.

### **C. Errors in Variables**

Although we have taken steps in our estimation to eliminate or weaken any impact of measurement error, one might argue that such errors cannot have been completely eliminated. It is well known that under classical errors-in-variables circumstances (which assumes the measurement error term is not correlated with the true values of the variables) coefficients on all the rhs variables will be biased and inconsistent if any of the variables is mismeasured.

Of course, our interest is centered on the coefficient for music radio listening. If there were only one explanatory variable in the regression the nature of the bias due to the mismeasurement is much easier to determine since it would simply become the typical error-in-variables attenuation bias, where the coefficients are biased toward zero. For this reason the regressions were rerun leaving out the other rhs variables except music radio listening time. Table 8 shows that the results from these regressions are very similar to those obtained from the complete regression. Under standard EIV assumption we can conclude that measurement errors are likely to lower our estimates of the impact of music radio.

|   | Pop & Cov Wgt             | Coverage >.6       | Coverage >.75      | Cov >.6; pop>.6M          | Cov >.75; pop>.6M         | Average            |
|---|---------------------------|--------------------|--------------------|---------------------------|---------------------------|--------------------|
| Music Radio Sole Variable   | -0.7505<br>(0.113)        | -1.0323<br>(0.143) | -1.1118<br>(0.200) | -0.3877<br>(0.157)        | -0.4976<br><b>(0.073)</b> | -0.7560<br>-0.1369 |
| Observations  | 95                        | 61                 | 41                 | 53                        | 36                        |                    |
| R-squared   | 0.024                     | 0.024              | 0.031              | 0.013                     | 0.043                     |                    |
| In Full Regression from   | -0.7903<br><b>(0.076)</b> | -0.7507<br>(0.169) | -1.1817<br>(0.126) | -0.6049<br><b>(0.067)</b> | -0.7767<br><b>(0.056)</b> | -0.8209<br>-0.0985 |
| Robust p values in parentheses; p value for music radio is for one tail test; bold is sig at 10% level; bold underlined at 5%, bold double underline 1% |                           |                    |                    |                           |                           |                    |

If the true coefficient were larger than the measured coefficient would not alter our analysis since it would merely strengthen the conclusions already drawn.

A solution often proposed for errors-in-variables is to use instrumental variables. Although we have performed such an examination above, there are difficulties with using it as a salve for the errors-in-variables problem beyond the difficulties mentioned for issues of simultaneity. Among those difficulties is the fact that most potential instruments (including the ones chosen) will suffer from the same errors-in-variable problems as the variables used in the OLS results unless instruments could be found that were based on DMA level data as opposed to constructed from the MSA level data, which we have not been able to do.

## **VI. Gauging the Overall Impact of Radio**

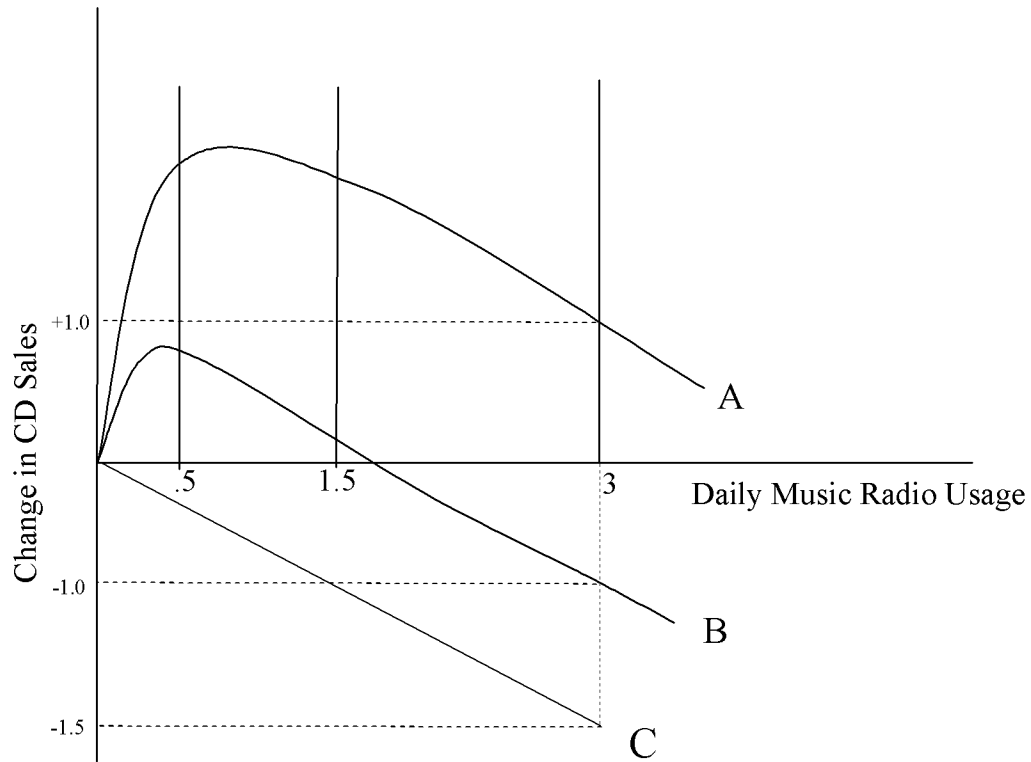
We have found that radio use lowers sales of sound recordings. Because we have only a limited range of observations to work with the regression results that we have found could be compatible with other scenarios that might allow for overall positive impact of radio play on record sales. For example, radio at first might have a positive informational aspect on sales, which then turns negative when greater radio use becomes a substitute for listening to CDs. In this case the overall impact of radio could be positive or negative in spite of our negative findings. Assume, for the sake of example, that radio has a positive impact for approximately the first .5 hours of daily use and a negative impact thereafter. This is illustrated in Figure 1 for three possible cases, A, B, and C.

Correctly estimating the impact of music radio when all observations are between 1.5 and 3 will lead to a conclusion that music radio lowers record sales, which is correct within the bounds of the data. Attempting to extrapolate the impact of a factor, such as radio use, to levels that are outside the bounds of the sample can easily provide misleading results if the relationship looks like A or B, however. The negative relationship found in measured portion of A could obscure an overall positive



impact that radio play might have on sound recordings since the large positive impact from the first half hour of music radio would be obscured.

**Figure 1: Out of Sample Estimates can be Misleading**



The bounds of music radio use in our 2003 sample (see Table 1) run from a low of 1.9 hours to a high of 3 hours, with an average of 2.3 hours. The 1998 values are just slightly higher. The range of changes in music radio use is .6 hours from 1998 to 2003. Within these ranges of observations the measured impact of radio play on the sales of sound recordings is negative. The average album consumption stood at 2.3 units per capita in 2003. If we were to assume that the relationship between music radio and CD purchases were linear throughout its range, as illustrated in case C, an increase in radio use from 0 to 2.3 hours per day could be expected to reduce album sales by more than one and a half albums, given a coefficient of  $-.75$ . This would be a very large negative impact of overall radio use. Yet the relationship represented by curve B would imply a loss of only 1 unit and the relationship

represented by A would imply a gain of 1 unit, and either of these other two curves could also be consistent with the data at hand.

Is there any evidence for or against such a nonlinearity that might overturn the results found in generalizing these regression results? First, we ran quadratic specification of the amount of radio music use to see whether there was any evidence of nonlinearity within our data. There was not. We also split the data in half based upon music radio usage and ran separate regressions for each half. The cities with smaller music radio usage had a larger negative impact than the cities with greater music radio usage, contrary to what we would expect from the type of nonlinearity suggested by lines A or B. Still, the limitations on our data keep us from being able to say much more.

The historical approach used in Liebowitz (2004), however, can be used to throw some light on this possible nonlinearity. That paper examined the sales of sound recordings immediately before, during, and after the introduction of radio into the American market. If there was an initial positive promotional element in radio, and if it were large enough to overpower the later negative impacts, that positive impact should have clearly shown up in historical data which included the very first hours of music radio listening. As already mentioned, the sound recording market was already quite mature at that time, with per capita sales the equivalent of those in 1950. Yet, as that paper reported, there was no evidence of any but a negative impact of radio on sound records since sales fell significantly during the first few years of radio's growth in spite of a healthy and growing economy. The fact that record sales fell during the birth of radio would seem to imply that the net effect is negative, even at an initial stage.

That conclusion is echoed in Morton (2003):

Record companies welcomed the subsequent transfer of electrical technology from radio and motion pictures to the phonograph industry, but hated the effect these two new forms of entertainment had on the record business. Radio was the biggest threat. On the eve of broadcasting's debut, between 1914 and 1921, record sales had doubled, largely because of sales of popular music. With the inauguration of network radio in the middle 1920s, the market for popular

recordings collapsed, resulting in a number of companies leaving the field or changing ownership. (Page 26).

To be sure, this issue cannot be completely settled since one can argue the radio/sound-recording relationship in the early 1920s might have been very different than the current relationship. Nevertheless, the lack of any evidence in favor of the possibility of a net positive impact, when compared to the more substantial evidence of the negative impact of music radio, provides a prudent analyst with at least a tentative conclusion that radio has a net negative impact on sound recording sales. Further research is warranted.

## **VII. Discussion**

Can this result be reconciled with the well-documented existence of payments to radio stations for the promotion of records? The existence of payola seems to have been taken as evidence that radio stations generate sufficient positive impact on record sales that the typical market clearing price for the right to broadcast sound recordings would be negative price for the rights to a sound recording. Does it provide evidence on whether a property right controlling the broadcasts of recordings would have economic value?

I think not. The overall negative impact of radio play found in the above regressions would be beyond the feasible control of record companies due to the current lack of broadcast property rights in sound recordings. Any record company that attempted to, let's say, pay radio stations to play fewer hours of sound recordings would only receive a portion of the benefits which would accrue to all sound recording companies. Nor would it make sense for a record company to pay radio stations to reduce the hours of broadcast of just that record company's songs since this would tend to decrease its market share and not have any salutary impact on overall record sales since those radio signals would still be

broadcast for the same amount of time, allowing the same level of substitution of radio for sound recordings by consumers. Further, antitrust laws would prevent the entire industry from collectively trying to make such payments. Even if they could do so, entry problems would likely doom such an agreement since any station (talk radio, say) could then threaten to play more sound recordings (by changing formats) in order to generate payments not to.

It is also the case that payola is consistent with the possibility of an overall negative impact of radio play for the simple reason that payola doesn't impact the total quantity of radio broadcasts of sound recordings. Payola only impacts which particular songs are broadcast. There does not appear to be any evidence, for example, that record companies tried or can alter the share of music relative to talk on radio stations, or that they tried to convert talk radio stations into music radio stations.

Both Caves and Coase note that numerous attempts were made by record companies and before them, music publishers, to stop paying radio station personnel or well-known performers to play particular records or songs, beginning, according to Coase, with an episode in 1890. Some of these attempts, including the congressional hearings in the late 1950s, appear to be instances where established record companies were trying to reduce the airplay of a group of smaller upstart record companies who were heavy users of payola and who happened to specialize in that evil music otherwise known as rock-and-roll. Caves suggests that modern attempts to limit payola have largely been attempts by major record companies to restrict competition from smaller independents. There may well be truth to these claims of redistributive impacts from attempts to control payola. Nevertheless, if payola type activities benefited record companies in an overall sense the industry should not have wanted to eliminate the practice altogether.

The results of this paper are entirely consistent with a modified version of the conclusions of the economists who have argued for a market solution. Their focus on only part of the property rights

problem have led them to conclude that payola should not be illegal, that it is payment for a useful service, and that the market should determine what the payments should be.

For example, Coase concludes (p 318):

..if the playing of a record by a radio station increases the sales of that record, it is both natural and desirable that there should be a charge for this. If this is not done by the station and payola is not allowed, it is inevitable that more resources will be employed in the production and distribution of records, without any gain to consumers, with the result that the real income of the community will tend to decline. In addition, the prohibition of payola may result in worse record programs, will tend to lessen competition, and will involve additional expenditures for regulation.

Caves states (p 292):

The evidence supports a simple interpretation of the economics of payola in broadcasting. Promotional benefits to the label cannot be captured directly by the broadcaster, who lives by advertising revenue that generally will not reflect this benefit. Payola compensates for valuable promotion, and leaves us wondering why it is stigmatized as bribery rather than recognized as payment for services rendered.

We agree completely with this call for a fully functioning market. A complete market, however, would not merely allow payola to be legal. A fully functioning market would allow a complete set of property rights over the sound recording being broadcast, including the ability of record companies to restrict radio play and to provide geographically exclusive territories for the broadcast of songs.

## **VIII. Conclusions**

The impact of music radio broadcast on the sales of sound recordings has received scant attention by researchers. The analysis above provides evidence that radio play is negatively related to the overall level of record sales and that the size of the negative impact is large. This implies that radio play is largely a displacement for the sales of sound recordings, a result that seems at odds with most conventional thinking.

The negative impact of radio on record sales only exists for music broadcasts and not for talk radio, which is consistent with a view that listening to music on the radio is a close substitute for listening to music on sound recordings. The measured negative impact of music radio on record sales is in the vicinity of 20% within the range of our observations. Extrapolating these results outside the bounds of our sample provides for a considerably larger impact, although such extrapolation is fraught with difficulties. Those difficulties are ameliorated somewhat by appealing to other evidence and other tests.

This finding is likely to become increasingly important in the near future as the transmission of music becomes increasingly digitized and the putative property rights (or lack of property rights) of the copyright owners come under greater scrutiny and political pressure. These results also provide some suggestions for public policy that is likely to become increasingly important in the next few years. As new broadcasting techniques (e.g., digital transmissions that allow high quality copies to be made automatically) make using the radio a closer substitute for the purchase of sound recordings, the above results should provide useful information in a discussion of whether the owners of sound recordings should be given the ability to exclude such usage.

On a methodological note, the apparent divergence between the impact of radio play on the sales of individual records versus its impact on sales for the entire industry indicates an important danger in trying to estimate the impact on an entire market by examining the impact on individual units, such as records. This potential fallacy of composition should be kept in mind whenever there are reasons to believe that the behavior of the whole may be different than the behavior of the individual parts (besides radio broadcasting, the example of file-sharing's impact on individual recordings vis-à-vis the entire recording industry come to mind). In these instances, the technology's impact on market shares can occur quite independent of the impact on overall market sales and it is important not to conflate share changes with overall market changes.

These problems highlight the difficulty of using any form of analysis to help regulators try to imitate markets. With a full property rights system in place, record companies could control how frequently their records were played and extract payments from radio broadcasters, or they might make payments to broadcasters as the case might be. A complete market solution would have a set of rights like the one between the television and movie industries. Record companies would be able to enter into whatever contracts they wished, including restricting the playing of songs to particular stations in particular localities. With this additional proviso, the market solution suggested by Coase, Caves, and Sidak and Kronemyer can be readily supported. In that case, the true value of the various rights could be determined where they are best determined—by direct observation in the market.

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## IX. Appendix (available on request): Cross Section Results by Year

Because the simple cross section results are likely to be eclipsed in usefulness by the fixed effects results I do not included them in the main paper. Table x presents some of these results from for years 1998 and 2003. Our primary interest is in the coefficient on the time spent listening to music radio. As was the case in the text, we make the null hypothesis that radio play has a positive impact, in accordance with generally accepted beliefs, and for that reason use a one tailed test of significance.

| Table x: Dependent Variable is Album Sales per Capita   |                           |                          |                          |                           |                           |                           |
|---|---------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
|   | -----1998-----            |                          |                          | -----2003-----            |                           |                           |
|   | Pop&Cov                   | Coverage>.6              | Coverage>.75             | Pop&Cov                   | Coverage>.6               | Coverage>.75              |
| Daily Per Capita Music Radio (Hours)  | -0.2684<br>(0.162)        | -0.3407<br>(0.164)       | -0.2231<br>(0.300)       | -0.8985<br><b>(0.004)</b> | -0.8684<br><b>(0.012)</b> | -0.7406<br><b>(0.060)</b> |
| Average Household Income (000s)   | 0.0014<br>(0.905)         | -0.0037<br>(0.825)       | -0.0144<br>(0.420)       | 0.0038<br>(0.620)         | -0.0035<br>(0.705)        | 0.0009<br>(0.942)         |
| Internet Access   | 2.8033<br><b>(0.003)</b>  | 3.5014<br><b>(0.004)</b> | 3.7365<br><b>(0.008)</b> | 2.2326<br><b>(0.013)</b>  | 3.2354<br><b>(0.005)</b>  | 1.1920<br>(0.325)         |
| BA Degree or above  | 2.0535<br>(0.153)         | 1.3688<br>(0.495)        | 3.8211<br><b>(0.076)</b> | 1.4250<br>(0.280)         | 1.3102<br>(0.332)         | 3.1834<br>(0.190)         |
| Share 12-29   | -1.4090<br>(0.319)        | -1.8482<br>(0.354)       | 1.3650<br>(0.481)        | -5.9985<br><b>(0.004)</b> | -6.6625<br><b>(0.001)</b> | -6.6705<br>(0.117)        |
| Share Males   | -0.0535<br>(0.976)        | -0.4676<br>(0.842)       | 0.6412<br>(0.796)        | -2.5706<br>(0.501)        | -5.7907<br>(0.268)        | -6.3801<br>(0.248)        |
| Share 55+   | -2.3272<br><b>(0.063)</b> | -2.0592<br>(0.224)       | -1.5963<br>(0.397)       | -2.8457<br>(0.165)        | -4.0333<br>(0.115)        | -6.0944<br>(0.118)        |
| Share Minority  | -0.1631<br>(0.705)        | -0.1207<br>(0.831)       | -0.0721<br>(0.902)       | 1.5137<br><b>(0.002)</b>  | 1.4869<br><b>(0.011)</b>  | 1.2157<br><b>(0.069)</b>  |
| DMA Population  | 0.0025<br><b>(0.023)</b>  | 0.0023<br><b>(0.077)</b> | 0.0019<br><b>(0.098)</b> | -0.0003<br>(0.776)        | -0.0006<br>(0.661)        | -0.0018<br>(0.195)        |
| Constant  | 3.1779<br><b>(0.032)</b>  | 3.7826<br><b>(0.080)</b> | 1.7483<br>(0.377)        | 5.9602<br><b>(0.086)</b>  | 7.6909<br><b>(0.088)</b>  | 8.9437<br>(0.123)         |
| Observations  | 94                        | 62                       | 42                       | 92                        | 66                        | 47                        |
| R-squared   | 0.505                     | 0.491                    | 0.669                    | 0.53                      | 0.5                       | 0.529                     |
| Robust p values in parentheses; p value for music radio is for one tail test; bold is sig at 10% level; bold underlined at 5%, bold double underline 1% |                           |                          |                          |                           |                           |                           |

The measured relationship for each year is generally similar to that found with the fixed effects model. It appears strongly negative in 2003 although considerably less so in 1998. The music radio

coefficients are inconsistent with the expectation that radio play is positive although the results for 1998 are sufficiently weak that we would have difficulty being able to say very much if we didn't have the superior fixed effects model to rely on.

Cities with populations having greater financial resources and media expertise would be expected to purchase more sound recording albums. Income, possession of the college degree and Internet Access all measure some dimension of this characteristic and are highly correlated with one another ( $\sim .6$ ), although the Internet Access variable is related to file-sharing in 2003, as discussed in more detail in the main text. Although the coefficients on Internet use and college are generally consistent with this hypothesis, the income variable would be troubling. The results from the fixed effects model are very different and are far more reasonable than the results from the yearly regressions.

Demographic variables appear to play a larger role in the yearly regressions, although that might be due to the fact that the fixed effects pick up much of the demographic differences between cities. In the yearly regression an increased share of individuals over 55 appears to decrease record sales which would make sense since older individuals do not purchase many records according to RIAA surveys. Cities with larger shares of males and youthful individuals have lower record sales in 2003 but not in 1998, although file-sharing might be responsible for some of this since both groups are much more likely to engage in file sharing. Larger cities seem to be associated with greater record sales in 1998, but there is no impact in 2003. Minorities are associated with higher record sales in 2003, but there is no impact in 1998.

Of course, it is possible that none of these cross section results should be taken too seriously. It is generally understood that cross section results are often less reliable than similar panel data since panel data allow the control of fixed effects that might not be picked up in the cross section regressions. For example, there may be important differences between cities that we are not controlling

for, such as the role of music in everyday life, technological and media knowledge, the importance of ethical or religious beliefs, immigration patterns, or family structure.

*For Marketing Research*

**Beyond Product Substitution: The Impact of Satellite Radio on Sales of CDs and Music Downloads**

By Yoram (Jerry) Wind and Abba Krieger  
University of Pennsylvania

Draft: September 11, 2007

## **Executive Summary**

*How can managers assess the potential substitution effect of a new product category based on new technology? This study examines an approach developed to assess the substitution effect of satellite radio on CD and music download purchases. Given the challenges of the research questions and data, the study had several distinctive features, including: 1) an experimental design using a control group of those who intend to subscribe in the next 90 days rather than all potential adopters' 2) identification of a segment of "music lovers" to test whether this group behaves differently, 3) a survey design to determine the frequency and amount of purchases using follow-up questions and analysis, 4) an analysis based on median rather than mean, to address data that was not bell shaped, 5) validation of results with other studies. This article points to a fruitful approach to analyzing such substitution effects and overcoming obstacles in experimental design and analysis.*

## **Introduction**

Rapid technological change is leading to increased concerns about substitution and cannibalization of sales of one product by products from other product categories. For example, to what extent will digital cameras and video recorders built into cell phones take over the market for traditional and digital cameras? To what extent will a PDA substitute for a computer? What will be the impact of video downloads on music rentals, DVD sales and movie theater revenues? And, as considered in this article, how will satellite radio affect sales of CDs and music downloads?

While the impact of new technologies in retrospect might be clear, their expected impact early in their market introduction is far from certain. Will they be a passing fad or the new market paradigm? What segments will adopt products based on the new technology? Will they consume the current market or complement and grow the market? These are the serious strategic questions facing companies with an incumbent technology when a new technology or product arrives on the scene. The answers to these questions have significant implications for competitive strategy, but assessing this impact is a serious marketing research challenge. This article outlines a research method used to assess the impact of a new product category that is a potential substitute for an existing one.

## **Distinctive Features of Research Approach**

The specific question examined in the study discussed here was whether subscribing to satellite radio promotes the purchase of other music (CDs or digital downloads) or substitutes for it. Given the challenges of the research question and data, there were several distinctive features of the research approach used in this study:

- ***Experimental design:*** While the experiment used a classical design of a test group and control group, the control used was respondents considering subscribing to satellite radio within the next 90 days. Since this group expected to become subscribers shortly, they were believed to be most similar to actual subscribers, making it more meaningful to compare their behavior with the test group.

- ***Added control:*** An added control was used to identify “music lovers,” based on attitude toward music, and see if this segment among the test and control groups exhibited similar patterns of behavior to that of the base test and control groups.
- ***Survey design:*** The survey used a series of questions, follow-ups and analysis to assess with confidence the frequency and amount of purchases of CDs and music downloads purchased per year.
- ***Analysis:*** Because the results were skewed (not normally distributed), the analysis of the differences could not rely on the conventional statistical analysis of the difference between means. We relied instead on the median. We calculated a 95% confidence interval around the median and relied on non-parametric statistics in determining whether the differences between the test and control group were statistically significant.
- ***Validation:*** The results of the study were validated against other external and independently conducted studies.

### **Experimental Design**

We designed a double-blind experiment,<sup>1</sup> which employed a classical design using a test group and control group. While the selection of the test group – subscribers to satellite radio – was obvious, the challenge was in selecting the most appropriate control group. To design a control group that would be most similar to the test group – except for actually using satellite radio – we chose a control composed of people who planned to purchase satellite radio sometime in the near future (82% in the next 30 days and the rest within 90 days). This design required significantly more screening up front, but these control subjects were expected to be more similar to the test group than a control drawn from the broader population. Using random digit dial sampling, telephone interviews were conducted by Guideline Research of New York to identify and survey 200 subscribers to satellite radio who were involved in the decision to subscribe to satellite radio, actually subscribed to it and listened to it. The screening process also identified 101 respondents who were considering subscribing to satellite radio in the very near future.

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<sup>1</sup> Neither the interviewers nor the respondents knew of the purpose of the study or who commissioned it.

### **Added “Music Lover” Control**

To look more closely at the attitudes of respondents, we also identified a group of “music lovers” from both the test group and the control group. Respondents were given a series of statements (*e.g.*, “Music is a very important part of my life” or “Going to concerts is my favorite activity”), and asked to state the extent to which they agreed or disagreed with them. The individual responses to the six attitude questions were added together for a total score, and the 301 respondents were ranked from highest to lowest based on their score. Once this was done, the median was calculated and all those above the median were defined as “music lovers.”

This group was then divided into subscribers and those considering subscribing, which allowed the comparison of these two sub-groups. The classification of the respondents based on the median was also checked against the results of a principal component analysis of the six attitude questions, which revealed that all but one of the respondents would have been classified in the same way.

### **Survey Design: Calculating the CDs and Downloads Purchased**

A key challenge of designing the survey was to determine the *frequency* with which respondents purchased CDs and digital downloads, and the *quantity* of CDs and digital downloads purchased. Without actual purchase data from respondents, we needed to design a survey in a way to capture the purchases of respondents and offset potential biases in memory of respondents.

Respondents were first asked to recall the most recent occasion on which they bought a CD. To help them remember the occasion, the respondents were asked to recall the genre of the CD. The respondents were then asked to state how many CDs they bought at that time, and how long ago they purchased the CD(s). Both of these questions were open-ended: respondents were not given a preselected range of quantities or time periods to choose from. Only if a respondents stated that they did not know how long ago they purchased a CD, would they be prompted with a series of questions (*e.g.*, was it more



than a week ago?) to determine the date. If respondents mentioned a period longer than 6 months, they would be asked how confident they were about his time estimate, and only those individuals who stated that they were confident, and that this time period was typical, were included in the analysis. Respondents were then asked the same questions in regard *to the next most recent time* they purchased a CD.

At the conclusion of these questions, respondents were asked whether the *time period* between purchases and the *amount purchased* was typical, and if not what was a typical period an/or quantity for them. Respondents were also asked the same questions in regard to their digital download purchases.<sup>2</sup> The order of the questions in the study was randomly rotated, such that half the respondents received the questions about the CDs first, and the other half received the questions about downloads first.

Given the responses, a procedure was developed to estimate the number of CDs and downloads purchased per year. This began with an initial analysis of the frequency between purchases and the amount per purchase, for three segments of respondents:

1. The first group was successfully able to recall the most recent purchase time and the time before that, and indicated that the time period and amount purchased were typical. For this group, the time between the two most frequent purchases was converted into days. For example, if a respondent purchased a CD two weeks ago and five week ago, the frequency would be the difference between the two, or three weeks (21 days).
2. The second group gave information on their most recent purchase time and the time before that, and the amount purchased on each occasion, but indicated that this was *not* their typical time period or amount. In this case, the typical purchase time or amount they gave was used.
3. Finally, were the few respondents who gave the *same* time for their most recent purchase time and the time before, indicating that they may not have understood the question (the meaning of the “time before last”), we relied only on their

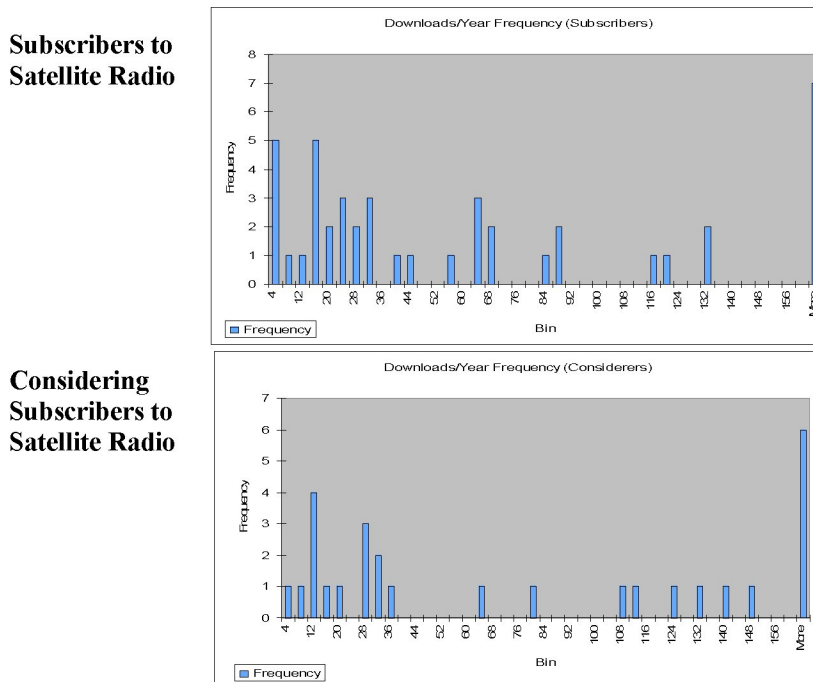
response to the last purchase occasion and the amount purchased on that occasion. The frequency used in this case was the time between that last purchase and the time of the interview.

Once the frequency between purchases was established, to calculate the number of purchases per year, we divided 365 by that number. For example, if the purchase frequency is 100 days, the average number of times the respondent will buy CDs in a year is 3.65 (365 divided by 100).

### Analysis

The results showed the distribution of purchases for the test and control groups are both non-normal, as shown in the figures below. In each case, the data look nothing like a bell-shaped curve, so the traditional approach of the comparison of means of the two distributions would lead to unreliable results. The selected alternative was the median, which less sensitive to extreme values of the distribution.

**Figure 1**  
**Distribution of Music Downloads Purchased Per Year**



The results of these calculations for CDs and downloads are shown in the table below, as well as the comparison to the mean. As shown by the high standard deviation of the calculations of the mean, this would not be an appropriate measure to use. In contrast, there is a 95 percent confidence interval around the median (suggesting that if the study were run 100 times, 95 of the test would be in this range). The results confirm the hypothesis of substitution effects.

**Figure 2**

**CDs and Music Downloads Purchased Per Year: Mean and Median**

| Measure                 | Music CDs        |                   | Digital Downloads  |                     |
|-------------------------|------------------|-------------------|--------------------|---------------------|
|                         | Test             | Control           | Test               | Control             |
|                         | <i>N = 160</i>   | <i>N = 88</i>     | <i>N = 44</i>      | <i>N = 28</i>       |
| Mean number Bought      | 19.3             | 21.3              | 77.5               | 107.1               |
| Standard Deviation      | 62.98            | 34.91             | 94.12              | 123.19              |
| <b>Median</b>           | <b>4.5</b>       | <b>7.0</b>        | <b>34.8</b>        | <b>49.1</b>         |
| 95% Confidence Interval | <b>3.33-6.09</b> | <b>4.56-12.16</b> | <b>20.30-64.41</b> | <b>18.24-130.35</b> |

Next, we needed to determine the confidence interval for these results. For this we used the Wilcoxon Rank Sum Test (a non-parametric test). This test ranks the entire sample, members of both the test and control groups, to see whether the  $n_1$  observations from subscribers tend to be lower than the  $n_2$  observations of those intending to subscribe. The  $n_1 + n_2$  observations are ranked from smallest to the largest and the ranks (1 for smallest, 2 for second smallest, etc.) are retained. If there are ties, then the ranks were assigned to the tied observations are averaged and all of the tied observations are given the average rank. The test statistic is  $T = \text{Sum of the ranks of the subscribers}$ . If satellite radio were a substitute (our hypothesis), one would expect the control group to have higher concentrations of high ranks. If satellite radio promotes the purchase of CDs and music

downloads, on the other hand, one would expect the test group to have a higher concentration of high ranks.

The Wilcoxon rank order was calculated for 12 comparisons, six for the test versus control of the entire sample and six for the segment of music lovers among the test and control segments. Within each of these, tests were done for both CDs and downloads (three for CDs and three for downloads). The three tests were for: a) number of purchase occasions per year, b) amount of purchases per occasion, c) the number of CDs or downloads purchased per year (multiplying a and b).

For CD purchases, there were highly significant differences (p of .0101 for the total sample and p of .0789 for the music lovers), as shown in the table below. This is a confidence level of 99%. Because the sample size for the downloads was relatively small, all that one can state is that, directionally, subscribers purchased 14.3 fewer downloads per year. While this directional result may not meet the academic test of the .05 peer review standard for p-value, it is still significant for managers. Coupled with the results for CDs and the corroborating studies detailed below, managers could still use this directional result to infer that there is a substitution effect of satellite radio on music downloads.

**Figure 3**  
**Test Comparing Subscribers v. Considerers:**  
**Wilcoxon Rank Sum**

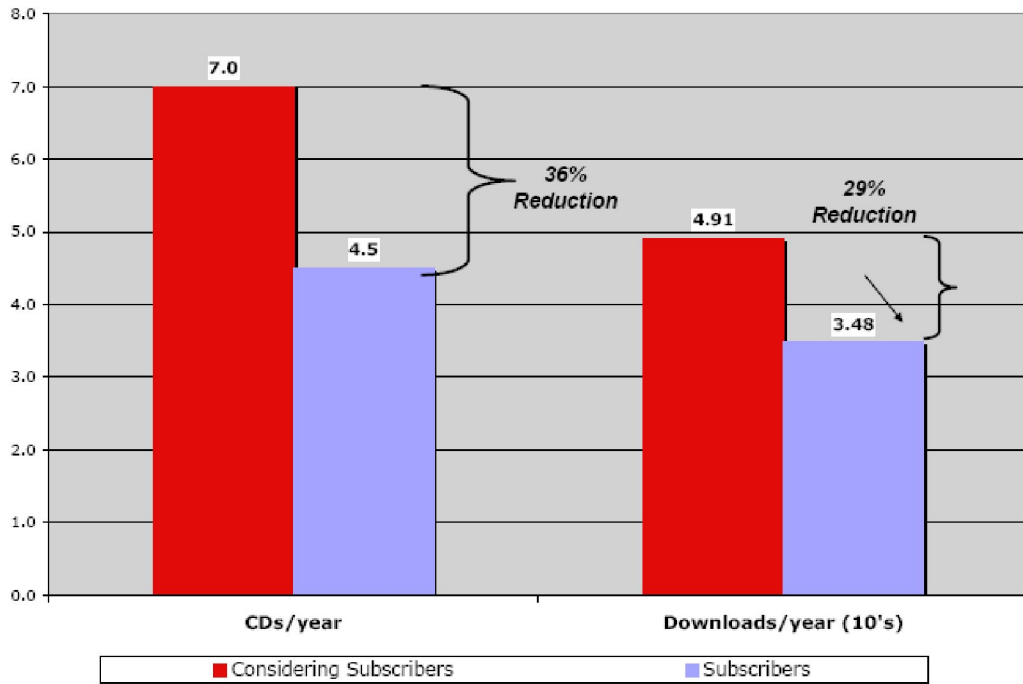
|                      | Total Sample |              | "Music Lovers" |              |
|----------------------|--------------|--------------|----------------|--------------|
|                      | Z-Value      | P-Value      | Z-Value        | P-Value      |
| <b>CD</b>            |              |              |                |              |
| Frequency            | -1.2818      | .1000        | -1.2034        | .1134        |
| Quantity             | -2.3835      | .0086        | -0.5327        | .2971        |
| <b>Quantity/Year</b> | -2.3227      | <b>.0101</b> | -1.4122        | <b>.0789</b> |
| <b>Downloads</b>     |              |              |                |              |
| Frequency            | -0.6917      | .2446        | -0.3467        | .3644        |
| Quantity             | 0.1867       | .5740        | -0.2365        | .4065        |
| <b>Quantity/Year</b> | -0.8549      | <b>.1963</b> | -0.5728        | <b>.2834</b> |

## Results

The study results show that satellite radio *clearly substitutes for, rather than promotes the purchase of CDs and digital downloads*. As Figure 1 below shows, satellite radio subscribers purchased 4.5 CDs per year and 34.8 digital downloads per year.<sup>3</sup> In contrast, individuals considering a satellite radio subscription purchase 7.0 CDs per year and 49.1 digital downloads per year. Satellite radio subscribers therefore purchase *2.5 fewer CDs and 14.3 fewer digital downloads per year – reductions of 36% and 29% respectively* – as compared to considering subscribers. Satellite radio is the most likely cause for the different purchase levels between the two groups because its presence in one group but not the other is the primary difference between them. There is little that differentiates a considering subscriber from an actual subscriber because the former may well become the latter in just a few weeks or months. Yet because the considering subscriber does not yet have satellite radio, his purchases – unlike his subscriber counterpart – cannot be attributed to satellite radio. The reduction in purchases by subscribers therefore demonstrates that satellite radio is apparently satisfying the subscribers' need for music, and/or consuming the time and money that they would otherwise be spending on CDs and downloads.

Figure 4

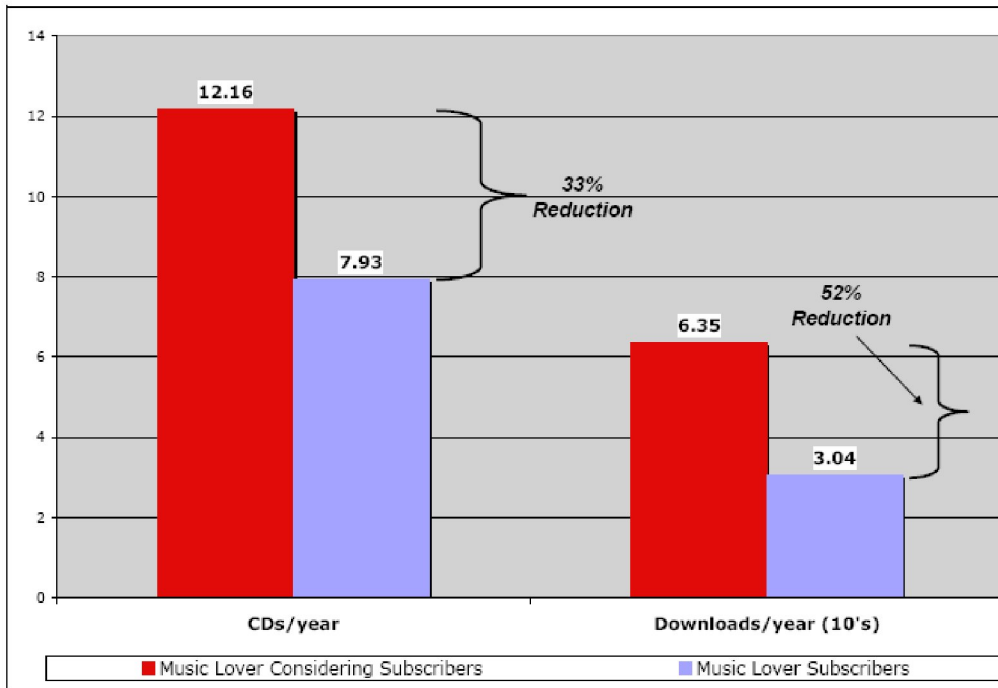
Purchasing Habits of Subscribers to Satellite Radio v. Considering Subscribers



Satellite appeared to have an even greater effect on *music lovers*, subscribers and considering subscribers who indicated that music was an important part of their lives. As with the study respondents as a whole, among these music lovers, subscribers purchased fewer CDs and digital downloads than considerers. Indeed, subscribers who were music lovers engaged in an even greater reduction in music purchases, suggesting that satellite radio's substitutional effect is strongest where music plays an important role in the lives of the consumers, who most likely to purchase the most music. Specifically, music lover subscribers purchased 4.2 fewer CDs and 33 fewer downloads than current subscribers – a reduction of 33% and 52%, respectively.

**Figure 5**

**Purchasing Habits of Music Lover Subscribers to Satellite Radio v. Music Lovers Considering Subscribing to Satellite Radio**



**Validation**

It is important to validate results by looking for other studies that could either corroborate or contradict the results. In this study, we were able to find four other studies, two conducted by the satellite radio companies, another study by an industry association and a fourth study conducted by another researcher. The two company studies showed decreased listening time for CDs and music downloads after subscribing to satellite radio. Since it is reasonable to assume that decreased listening time will lead to decreases in future purchases, the results are consistent with the results of our study.

In addition, a March 2007 study by the National Association of Recording Merchandisers (NARM) produced similar results. The Internet survey of 3,136 consumers, including 326 who listen to satellite radio, indicated a sizeable substitution effect attributable to satellite radio. The study found that 33% of satellite users reported not purchasing any music

(CDs or downloads) in the last year, compared with 23% of respondents who listened only to terrestrial radio. And 85% of those satellite subscribers who made no purchases indicated that the reason was that they were “satisfied listening to music on satellite radio.” The study also indicated that the more users listen to satellite radio the more likely they are not to purchase music in other forms.

A fourth study was conducted by Mantis using a random telephone sample of satellite radio subscribers, asking them to recall the number of CDs and music downloads they bought in the last three months and compare it to the number they bought three months prior to subscribing to satellite radio. The vast majority of respondents indicated that after subscribing to satellite radio, they decreased their purchases of CDs and downloads. When asked why, their responses to the open-ended questions clearly support the hypothesis that satellite had substituted for other music purchases.

Given the consistency of the results of all these studies using different methodologies, conducted by different research firms and sponsored by different parties, these studies validate the results of our study. The converging validity of these diverse studies gives us increased confidence in the results, especially for downloads, where sample size was small and the non-parametric test showed only a directional effect.

Drawing upon such studies is crucial in complex and fast-moving environments, where there may not be extensive survey data or academic studies to draw upon. There may not be the luxury of waiting for additional independent research to be commissioned or conducted. It is very important to look carefully at any and all industry and company data, whenever available, to help to confirm or challenge research results, as was done in this study.

## **Conclusions**

The research approach used in this study offers a general methodology for assessing the important substitution versus promotional impact of one product category on other product categories. First, the study used a distinctive experimental design based on a



control group of future subscribers rather than the broader universe of all potential adopters. Second, it added a control based on attitude, identifying “music lovers” and testing whether this group behaved differently from the broader population. Third, it employed a survey design created to determine the frequency of purchases by breaking respondents into three categories and using follow-up questions or analysis to infer purchase amount and frequency. Fourth, the study employed an analysis based on median rather than mean, to address skewed data. Fifth, the results were validated against diverse others studies from industry and other researchers. Furthermore, the results offer a lesson in utilizing non-parametric data, which is sometimes ignored. Results that are directional can indicate which of the two hypotheses are correct.

By their nature, new technologies such as satellite radio present serious research challenges. The market is not well defined. The profile of potential adopters is just emerging (and may be changing as the technology spreads). Yet managers, particularly those with incumbent products that might be cannibalized by the newcomers (such as companies that sell CDs and music downloads in this example), need to make decisions today about how seriously to take these threats. Is this new technology or product category a passing fad or the future of the market? The assessment of the potential for substitution is critical to shaping competitive strategies in response. The approach outlined in this article offers one way to generate insights fairly rapidly but rigorously, to address this critical challenge.

### **About the Authors**

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