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The Economics of the Popular Music Industry

Modelling from
Microeconomic Theory
and Industrial
Organization

Second Edition

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Introduction: A Short Overview of Music Consumption and Production

Music entertains us, influences us, and shapes our lives. From the message to the medium to the physical experience of listening to a live performance, music has charms to soothe the savage breast. Rock and roll used to be a way for people to stick it to the Man. Is that still possible in today's corporatized world? Technological development has played a key role in music production and consumption. From the Sony Walkman to its modern day equivalent, the smartphone, technology affects how musicians create their work and how listeners experience it. This book examines the popular music industry from an economics perspective. It will examine how music is produced and consumed and investigate the role of technology in the business of music.

The idea for this book came about from a freshman seminar I taught in the fall of 2011 at Wabash College titled *The Economics of the Popular Music Industry*. I had always been a fan of popular music and as an amateur observer, had watched the transformations in the music business from both the consumer and producer side. As an economist by training, it was clear that the shifts in the industry came about due to the enormous technological changes in the ways that music is produced and consumed. The shift from analog to digital recording and listening has had a massive impact on the way the industry operates. My own students provided an excellent example of how people listen to music today—invariably on a digital device, at the time an iPod and eventually on a smartphone. An

informal polling of the students revealed that hardly any of them had ever purchased music in a physical form; usually their purchases (if they ever made legal purchases) were digital downloads from iTunes music, Amazon, or other online stores. More recent informal polling indicated that their listening habits have shifted to include online streaming sources, like Pandora or Spotify. Depending on the situation, circumstance, or level of convenience, music was now more portable and accessible than ever before. And now more than ever, music consumption and music collecting are an all-pervasive part of life. Collecting has become something of a game of diversifying interests, with individuals competing on the size and variety of music on their phones. Since one's collection of songs or albums could number in the thousands, without taking up the physical space that albums used to take up, music collecting was easier than ever before. The diversity of music in collections has widened, and listening habits have changed, all due to the ease by which music is available to everyone at almost any time. In addition, rather than an album purchase being a special event marking a long awaited release, we view the accessibility of music as a generally accepted fact of life. Since college students' consumption choices represent trends in the music consuming populace, understanding their preferences, not just in terms of genres, but in the forms and methods by which music is consumed is vital to understanding the general consumer base of the music industry.

The economic importance of the music industry cannot be overstated. In 2018, the industry contributed \$170 billion to the US economy, an increase of 14.8% over 2015.¹ But the economic impact goes even further than that, when accounting for the multiplier effects that ripple out to related industries. The RIAA 2020 report estimates that for every dollar of direct revenue from the music industry, another 50 cents in revenue is created in a secondary or adjacent industry.² The music business supports a staggering number of jobs, either directly or indirectly. Examples of direct jobs would be a musician signed with a label to produce records, engineers in the recording studio, and music marketing employees at the label (an indirect job would be that of game developers who use that musician's recorded works in games). In the United States alone, the

¹ Stoner and Dutra (2020).

² Ibid.

number of music industry-related jobs is estimated to be 2.47 million.³ However, it should be noted that these estimates were made prior to the impact of the worldwide COVID pandemic. Pandemic-related quarantine measures shut down businesses, and were detrimental to touring musicians who no longer had concert ticket revenues as a source of income. Given the increasing importance of touring for musicians in the digital music age, this was a devastating economic blow to musicians who relied on ticket sales and sales of concert merchandise as a means of financial support. A fuller discussion of the impacts of the COVID pandemic on the music industry will be presented in a subsequent chapter. Overall, music production and consumption are vital parts of the entertainment industry in any economy, and their roles in the creative industries are highly important, economically speaking.

Every time a new technology arises in the industry, the clamor that arises is about how this new technology will be the ruin of the industry and the hardworking musicians that are its foundation. From the home gramophone player to broadcast radio to compact discs to digital downloads to online streaming, the outcry and controversy have always been the same. And yet, it seems that it's the same as it ever was. The music industry endures. The players and the infrastructure may change, but musical output continues. And the market persists, though with shifts in the way the music business is conducted. These shifts, primarily due to technology, have had an enormous influence on the way music is produced and distributed. They can also influence how music is consumed and in turn influence how music is produced, which in turn influences how it is consumed.

In response to the significant changes in consumption styles due to technology (digital downloads or streaming services versus actual physical albums) the music industry has responded either by attempting to restrict or control the way music is consumed, or by analyzing the changes in consumption patterns in an attempt to harness these forces for their own profits.⁴ Music production has high startup costs and requires substantial infrastructure and distribution networks, not to mention the cost and time to write, record, produce, and edit an album in the studio. Changes in technology, namely digital recording and online distribution have

³ Ibid.

⁴ Ganz (2009).

eliminated the need for physical distribution networks and storefronts.⁵ Indeed, digital technology enables musicians to record and distribute music via their own means, potentially obviating the need for record contracts and record companies. Ani DiFranco is a notable example of an artist who releases her works under her own label, Righteous Babe Records, citing the desire for artistic freedom and liberation from corporate constraints.⁶ Although DiFranco's decision was not precipitated by the technological changes occurring in the music industry, her choice foretold a future where record companies, the middlemen of the industry, would no longer be necessary for commercial success. Modern technology has replaced the middlemen, and now many entrants into the industry bypass record labels in favor of recording, releasing, and promoting their music themselves. In the words of Justin Ouellette, founder of the website Muxtape, "[t]echnology has spoken; the people have spoken; there's...no putting the genie back in the bottle."⁷

Technology has played such an enormous role in the music industry that its influence cannot be understated. The history of recorded music is rife with examples of how technology has changed the way music is produced and consumed. An example is the 33 1/3 rpm vinyl long play (LP) record. Prior to the development of the LP, the 78 rpm gramophone record was the standard format. The 78 records had a capacity of about three to five minutes per side, depending on the size of the record, and it made of shellac, a relatively noisy and fragile medium. This format imposed a short time limit on the length of a piece of music that an artist could record. The very physical limitation played a role in music composition, as an artist was aware of the time constraints imposed by the medium, and it even had an influence on the artistic process of creating music. For example, Igor Stravinsky's *Serenade for Piano* was to be released in the United States on a set of 78 records. With an eye toward the time limitation of the 78 record, Stravinsky recalls, "This suggested the idea that I should compose something whose length should be determined by the capacity of the record."⁸

⁵ Kreps (2009).

⁶ "Ani DiFranco: Biography," <http://www.righteousbabe.com/pages/ani-biography>.

⁷ Ganz (2009).

⁸ Stravinsky (1962) quoted in Katz (2004).

Compositions with multiple segments could be spread across the sides of several 78s, with home equipment that could play the records back in sequence automatically.⁹ Here, business decisions also had an influence on musical output. The even number of record sides dictated that a composer write an even number of movements, since record companies were reluctant to release a set of albums with one blank side. Indeed the term record *album* came about because empty booklets sold to hold sets of 78 records were similar in appearance to photo albums. These booklets were necessary for storage, since 78 records were made of fragile shellac, an imperfect medium used until advances in technology led to the widespread adoption of the vinyl record as the preferred medium.

The 7-inch 45 rpm vinyl record is another example of the influence of the physical limitation on musical output based on technology. Columbia Records and RCA Victor were competitors in the market for records for home and commercial use. The use of vinyl as a medium for music was a key development in the history of recorded music technology, as it was quieter and more durable than the shellac that comprised 78 records. Peter Goldmark at Columbia Records led the way in developing a 33 1/3 rpm microgroove long play (LP) 12-inch vinyl record that could be played on affordable home playback systems and Columbia officially unveiled this format in 1948. On this format, the time per side was approximately 22 minutes, for a total capacity of 44 minutes for an entire album. In 1949, Columbia's competitor, RCA Victor developed a vinyl album that played at 45 rpm that was meant to be a successor to the old 78 albums. The new 45 had the same time per side as the 78s but it offered greater durability compared to the old shellac 78s and more convenience due to its smaller size. RCA Victor meant the 45 to serve as an improvement over the old 78s, and held to the belief that the listening public was still committed to the time lengths on the old 78s, in spite of the side breaks that were an inevitable part of music listening. During the so-called "war of the speeds" Columbia Records promoted its long play 33 1/3 record as the definitive standard for mass market consumption of music. Eventually RCA Victor realized that the new 33 1/3 record format was winning the format war and started to release 12-inch LP records under its own label. Yet the 45 format persisted, mainly for short releases, primarily single pop songs. The 45 allowed for about three and a

⁹ "Defining a Record (Gramophone)," The Record Collector's Guild.

half minutes per side and this became the de facto length for pop songs for years. The industry assumption became that the listening public only had the attention span for pop songs of this modest length. But Bob Dylan's "Like a Rolling Stone" shattered the notion that the listening public's attention span would only tolerate three and a half minute pop songs. Dylan's song clocked in at over six minutes, and the sales and marketing staff at his label, Columbia Records, considered the single to be too long for listeners to accept. It was released as a single by cutting the song in half to fit on either side of a 45 record. Radio DJs played half the song by fading it out at the end of side one, but fans clamored for a full, uninterrupted version and radio stations began playing the song in full using the album version on the 12-inch LP. The single later reached #2 in the United States on the Billboard pop charts.¹⁰ Although the three minute pop song became the standard length, and indeed still is to this day, there were clearly exceptions that indicated the public's willingness to listen to longer songs without interruption.

The very physical limitation of the physical LP has influenced creative output from the beginning, based on profit motives. If a musician or band wanted to release an album longer than 44 minutes, they could potentially do so via a double album release. But this practice was often discouraged by record company executives who considered double albums less marketable and profitable than a single LP release. Double albums were more expensive to produce and distribute, and instead, companies would release a single LP version of the double album, cutting tracks to make the entire album fit on two sides of an LP. An alternative to get around the physical time limitations imposed by an LP was groove crowding whereby the actual physical grooves on the album were spaced more closely together in order to squeeze additional minutes of music per side. Unfortunately the consequence of this groove crowding was a deterioration in sound quality in the form of what is known as a pre-echo. A pre-echo is caused by the cutting on one groove of the record bleeding through to the next groove, generating a faint sound of the music that is to come in the next groove.¹¹ Pre-echo is almost inevitable on most record cuttings, but is worsened by crowding the grooves on a record.

¹⁰ Marcus (2006).

¹¹ Gravereaux and Bauer (1971).

Clearly groove crowding was not a solution to the physical time limitation on an LP.

For decades, the vinyl LP dominated the industry as the medium of choice for album releases. The next major innovation, the cassette tape, became a substitute for the vinyl LP as the newest form of consumer goods for fans of recorded music. The cassette tape and cheaper portable tape players were introduced in the late 1960s. The convenience and portability of the cassette freed the listener from the bulky equipment required to listen to LPs. Now listening did not have to be within the confines of the home, but could take place anywhere. Listeners were no longer constrained by the physical equipment necessary to listen to a vinyl record. All in all, the cassette tape heralded an era of both portability and transferability that was unimagined till then. The cassette's size was an advantage in terms of convenience, and the rise of the Sony Walkman began an era in which consumers could listen to music anytime and anywhere. In addition, cassette technology allowed listeners to make copies of vinyl albums. Blank 90 minute cassette tapes became popular because the contents of two entire vinyl albums would fit on a 90 minute tape.¹² Consumers could take music with them, in whatever permutation of track lineup they wished. Inexpensive home taping technology also enabled consumers to create compilation tapes to exchange with one another. The rise of cassette culture, with music fans exchanging copies of rare recordings or live recordings is a noted cultural artifact of this medium. Another example of the popularity of cassette culture is in India, where economic liberalization of trade and the declining cost of cassette tape technology led to increasing numbers of middle and lower middle class households able to afford the equipment for home listening and recording. Along with a relaxation of the monopoly structure of the music industry previously dominated by one company, HMV, these forces led to the enormous rise of the consumption and reproduction of music on cassette tapes in India.¹³

Taping also became a medium on which music fans could tape and trade live concert recordings. The Grateful Dead is one especially famous example of a band that tolerated and even encouraged bootlegging of

¹² Morton (2006).

¹³ Manuel (1993).

their live performances, provided that bootleggers did not profit financially from these tapings. The motivation behind this decision was that the more their live concert recordings were disseminated among the listening audience, the more it would encourage listeners to buy official album releases and attend Grateful Dead concerts.¹⁴ A band's albums and its live concert performances are complements for one another, in that the consumption of more albums will go hand in hand with the consumption of more live concerts and vice versa. The exchange of bootleg tapes of Grateful Dead concerts essentially promotes the band's music and encourages further consumption of complementary goods to the music, namely the band's albums and concert tickets to live performances. In the 1980s–90s, the Grateful Dead became one of the top grossing touring bands in the United States, cultivating a fan base of Deadheads who would follow the band from city to city on their concert tours.¹⁵ Note that the ease with which albums could be copied onto cassette tapes led to widespread bootlegging of vinyl records, with a resultant decline in vinyl album sales.¹⁶ As a consequence, touring became ever more important to a band's income. The Grateful Dead's business decision to encourage bootleg taping of concerts was relatively rare at the time, and foreshadows what became known as the Bowie Theory¹⁷ of concert touring. As David Bowie predicted, "Music itself is going to become like running water or electricity. You'd better be prepared for doing a lot of touring because that's really the only unique situation that's going to be left."¹⁸ Bowie's prescient comments in 2002 foretold what would eventually happen to the music industry: digital piracy and low cost streaming replacing album sales, and the growing importance of concert touring as a source of livelihood for musicians. The Grateful Dead appeared to be ahead of the curve in terms of encouraging bootlegging of concert performances to encourage concert ticket sales, and making touring a primary source of the band's income.

Cassette tapes are still used today by some punk and garage rock bands in order to achieve the hissy, distorted sound that characterizes those

¹⁴ Cummings (2013).

¹⁵ "The Grateful Dead Biography," Rock and Roll Hall of Fame.

¹⁶ "The Way the Music Died," PBS *Frontline*, 2004.

¹⁷ Connolly and Kruger (2006).

¹⁸ Pareles (2002).

genres of music. This is yet another example of how the characteristics of the medium have an influence on musical output and possibly musical creativity. Like the length of the gramophone record (in any of its forms), the cassette medium had qualities that appealed to a certain genre of musicians who could use it to its best advantage in terms of creative output. In addition, the minimal cost and ease of access to this inexpensive form of technology allow these bands to record and freely exchange tapes with one another and hence generates yet another music distribution network separate from formal channels.¹⁹

The popularity of cassette tapes foretold the era of digital music players and singles in digital form that, with their ease of portability and reproducibility influenced consumers toward the new norm of ready access to music anywhere and everywhere. The digital revolution in sound recording was yet another move that shifted the focus of the music industry from analog-based recording to digital. The introduction of compact disc technology freed musicians from the space limitations of the LP record. Instead of 44 minutes total for an album, a CD allowed 77 minutes of uninterrupted music. In addition, the compact disc promised a cleaner, purer sound, without the crackles and pops associated with a vinyl LP. Digitization of music was an application of science and technology to music that would reproduce sound more accurately than ever before, or so was the claim. But converting a sound recording that had been originally recorded on analog equipment to a digital form was not always a perfect transfer. Listeners often complained that the sound of compact discs was less pleasant to the ear than an album on vinyl. In its infancy, digital sound technology had not yet perfected its art. Even today, many audiophiles have a preference for one or the other, viewing them as imperfect substitutes for one another.

In any case, the digital revolution generated yet another significant shift in the way the business of music was conducted. In the short run, the introduction of the compact disc was a boon to record companies as this new format was yet another way to sell old back catalog albums to consumers. During the 1980s and 1990s, record companies posted enormous profits from sales to consumers who were replacing their vinyl LPs with compact discs.²⁰ In short, a substantial portion of record

¹⁹ Ulaby (2011), Marsh (2009).

²⁰ Knopper (2009).

company revenues at the time came from selling their back catalog to consumers on this new medium.²¹ But the boom was short lived, as the new digital technology would lead to easy digital copying of recorded music by consumers, and then eventually exchanges of files on numerous piracy sites. The debut of Napster in 1999 was a landmark event which portended the next major shift in the music industry. Napster's free and easy digital exchange of music online appealed to music consumers, and college students in particular. Napster's system was a peer to peer file sharing network in which users could both post files and download files from other users. But Napster soon faced multiple legal challenges, with musicians and record labels alike filing suit against the company, citing copyright infringement under the Digital Millennium Copyright Act. Napster eventually closed down, and it is reincarnated today as a pay-per-service business, offering music subscriptions and streaming services.

Napster was ahead of its time, but the music industry was not ready to face the challenges of the digital revolution. But these changes were inevitable, and the liberation of music from its physical form and into digital files signaled the next major shift in the way music was to be consumed and produced. The success of Napster's contemporary analogs, Apple Music (formerly the iTunes music store), Amazon music, Pandora, and others indicates the public appetite for online music services by their massive commercial success.

Today, the consumer's access to digital files and the ease of downloading (either legally or illegally), along with online streaming services can be considered the contemporary analogs to the cassette tape. Technology now allows the ready accessibility of music to consumers anywhere, untethered by bulky equipment. Indeed, the development of cloud-based streaming systems even eliminates the need to own physical albums, as songs can be streamed via the cloud system at any time or place. More than ever, music is disconnected from the physical medium, and the way consumers purchase, access, or listen to music is hugely influenced by the technology available today. The major shifts in the way that music is produced, distributed, and consumed have had enormous implications for the music industry and how the business of music is conducted. The roles for traditional middlemen including record labels,

²¹ Rose (2011), "The Way the Music Died," PBS *Frontline*, 2004.

radio networks, and distribution channels remain in flux, and all due to changes in technology that enable easy digital reproduction and distribution of music. In other words, “[p]iracy may not kill music but history may record that it killed the twentieth-century music industry.”²²

On a related note, technology has played a role in influencing the sound of recorded music, in the so-called loudness wars. The loudness wars involve the reduction of the dynamic range of a piece of music. Extreme compression of the dynamic range results in distortion of audio, and the motivation behind such sound engineering is to increase the loudness of a piece of music.²³ Many music fans point to Oasis’s 1995 album “(What’s the Story) Morning Glory” as one of the first albums which used extreme compression of dynamic range to achieve a louder sound.²⁴ What is the motivation behind such actions? It is possible that in an attempt to capture the listening audience’s attention, music is being engineered more loudly. Music is now a ubiquitous commodity available at anytime, anywhere, during any activity. With this in mind, sound engineers are creating albums that are louder than before possibly to capture a distracted audience’s attention. It sparks a music “arms race” with ever increasing levels of compression and increasing loudness in a never-ending spiral.

Streaming is the next newest innovation in the continuing saga of the music industry and its relationship with technology. This new technology enables users to have access to millions of songs, either with no fee but with advertisements or for a monthly subscription fee. There are a variety of types of streaming services, but one main distinction is between services that are interactive versus non-interactive. Interactive services allow the user to interact with the streaming platform, freely choosing which songs, albums, artists, or genres to stream on demand. Non-interactive services are more like the radio, where music is pre-selected, and listeners are not allowed to choose what song plays next. Within each type of service, there are various types of subscription levels a consumer may purchase. There also “free” levels in some streaming services where there is no monthly fee, but the listener must tolerate interruptions by advertisers. The paid subscription allows access to music, ad-free. Some streaming

²² Cummings (2013).

²³ Deruty (2011).

²⁴ Henshall (2012).

services, like Apple Music, do not offer a free tier at all, and all consumers must pay a monthly subscription fee. These types of pay-only services offer other types of perks. Apple has a broader music catalog compared to Spotify, with playlists that are more custom tailored to consumer interests based on its 2021 update that has added more of a human touch to music curation for any occasion. It is also the industry leader in terms of the sound quality on the music it offers. So while Apple doesn't offer a free version of its streaming service, it provides several advantages to consumers, depending on their tastes and preferences.

The theme running throughout any analysis of the music business is the fact that technological change has an enormous influence on music in how it's created, physically produced, distributed, and consumed. The question remains of how musicians (individual artists or bands) can continue to generate creative musical works in the face of constant and significant shifts in the music industry. Technology has both assisted and hindered musicians in this pursuit, as better recording equipment and ease of distribution via digital means have made it easier for musicians to record, promote, and distribute music. The old life of a musician was to create albums and promote their music via touring and radio airplay, in the hopes that this promotion would move units in the record stores. Now the model has changed. Music is given away freely (or almost freely via streaming services) in the hope of promoting concert ticket sales, which have become a vital way for musicians to make a living. At the same time, technology has enabled the mass distribution of illegal digital copies of music; in this age, copyright over music can have little meaning. An illegal digital download is a near perfect substitute for an actual purchased piece of music, and is nearly costless to the consumer. Based on simple economic principles, consumers will opt for the cheaper good instead of the more expensive one. Hence, the steadily declining levels of compact disc sales since digital downloading became simple and widely accessible. In the current era, we see a decline in music piracy as streaming options have made access to music so easy and inexpensive, therefore the incentives to pirate music are lower than before.

Technology has also changed how the business of music is conducted on an industry level. In the past, new acts would sign on with record companies, signing away the rights to their music in exchange for the financial and physical capital to produce, record, and sell their albums, using the company's promotion and distribution networks and influence over radio stations' airplay. Now with the advent of digital technology,

the old distribution networks are no longer necessary. Musicians can now sell digital downloads from their websites or via other online distribution networks. Bands can self-produce their albums and bypass the middleman, the record companies. Of course many bands still sign on with big label record companies, to make use of the label's extensive power in the industry in terms of promotion, marketing, and influencing how much airplay a single can get on radio networks. But nowadays, musicians and bands can self-produce, self-promote, and tour, without having to give over a share of revenues to the labels. Ani DiFranco's business model is flourishing today. However, with streaming, we are revisiting the old models in which the labels have extensive market and bargaining power, with their established networks in the industry that individual musicians do not have. With significant financial capital and industry connections, labels can buy banner ads and influence suggested playlists to give favored artists a leg up in terms of exposure in the streaming market.

As a side note, it is important to note that ubiquity of the use of music in a multitude of other experiential goods has also influenced the structure of recording contracts with labels. Recording contracts of old were structured with the labels providing an advance to the musicians. The musicians would use the advance record of their albums, market it, and possibly tour to promote it. The musicians would receive royalties on album sales after they had repaid this advance to the record companies. In the words of Jacob Slichter, drummer of the band Semisonic,²⁵ "we would be rock and roll sharecroppers".²⁶ Contemporary recording contracts known as 360 deals are standard practice now. These 360 deals are similar to deals of old, except that they now include provisions for record companies to receive a share of musicians' income when their music is used in a variety of related goods, including advertising, movies, television, video games, ringtones, and so forth.²⁷ Of course, in the current streaming era, contracts have been updated to reflect royalties from streaming as well. This will be more fully discussed in a subsequent chapter.

²⁵ And grandson of Sumner Slichter, past president of the American Economic Association.

²⁶ Slichter (2005).

²⁷ Passman (2012).

The music industry produces commodities that have a supply and a demand like any other good. The way they differ from physical goods is that they provide an experience for the consumer, hence the name experiential good. The experience can be unique, such as attending a concert performance, or it can be repeatable, such as listening to a recording. The music industry, including the musicians, whether they are writers or performers, and record company executives have attempted again and again to control the way a piece of music is experienced/consumed.²⁸ While a concert is a strictly controlled experience only accessible to the ticketholder, a physical recording is not. Digital copying of music separates the music from the concrete medium and allows mass reproducibility, and hence weakens any copyright protection the music may have. Even Apple's iTunes store eventually lifted the Digital Rights Management (DRM) from its entire catalog,²⁹ enabling consumers to freely copy and use digital files. Since the digital revolution has resulted in a reduction of copyright protection for music, one wonders whether musicians' musical creativity and output have been affected by this loss of incentive. Standard economic theory dictates that copyright protection is vital in order to ensure that the profit motive remains for innovators of any kind, including those in creative fields. With the loss of such protection, can musical creativity survive?

Previously a song's copyright acted as a restriction on the reproduction of a piece of music. It enabled a writer to have monopoly control over the sale of their works. Now, with the advent of downloading and streaming technologies, copyright protection is no longer absolutely enforceable. Since copyright protection now only provides weak protection against illegal downloading, the question that arises is whether the incentive still remains for music artists to create new songs or albums. If financial incentives are no longer there, the impulse might be to cater to the lowest common denominator; why should a musician produce his or her best creative work if there is no living to be made from it?

Fortunately, creative output still seems to be there, as various studies have shown. Waldfoegel has conducted several empirical analyses (see Waldfoegel, 2011, 2012a) of whether the quality of new music has been

²⁸ Ganz (2009), Kravets (2009).

²⁹ Stone (2009).

affected by technological changes that have enabled easy illegal downloading. On the one hand, technology has made accessibility to illegal downloads easier, but it has also made it easier for more bands to produce and distribute music more easily. Technology is a double edged sword that has reduced production costs, hence possibly bringing more music to the market, yet has also made it harder for musicians to make a living from their music because of the lack of copyright protections. However, Waldfoegel finds that musical creative output is as robust as before the advent of this technology. Starting with the release of Napster, the first file sharing technology that was available to the public, and an index of high quality music, based on music critics “best of” lists, along with music sales and airplay data, his study shows that the quality of music has not declined since this technology became readily accessible. It is interesting to note that streaming has also influenced how musicians make music. The very nature of the medium and how music is now monetized provides specific incentives to musicians to write songs in a certain way.

Illegal digital downloads can act as substitutes for each other or complements to other goods. In another study, Oberholzer-Gee and Strumpf (2007) provide empirical evidence that online file sharing does not displace album sales, and in fact, the production of music (as well as books and movies) has been increasing. Their arguments are as follows. On the one hand, illegal digital downloading can displace album sales, since it takes the place of the purchase of an album (or single). On the other hand, free accessibility to more music exposes consumers to more genres, possibly sparking interest in a wider range of musical groups and encouraging more album sales. In addition, it could be the case that illegal digital downloads do not displace album sales because the downloading activity occurred for songs/albums that the consumer would *not* have purchased in the first place. At a price of zero (for an illegal download), the quantity demanded is extremely high (or infinite). Oberholzer-Gee and Strumpf ultimately conclude that illegal digital downloads have no effect on album sales. But Liebowitz (2007) provides a critique of the Oberholzer-Gee and Strumpf paper, citing various methodological issues with the paper, and contrary to their claims, asserts that there is no evidence that file sharing has no impact on album sales. Given that album sales have declined significantly since the digital revolution, Liebowitz’s critique seems reasonable. Waldfoegel (2010) conducts a survey of college students to examine the relationship between file sharing and album or song sales. He finds that file sharing has replaced purchases of music,

although file sharing primarily occurs for music that a consumer would not have purchased in the first place (what he calls low valuation music).³⁰ Clearly the jury is still out about the impact of file sharing on the music industry. Whether the new digital technology displaces sales due to illegal downloading, or encourages more music purchases because listeners are now exposed to a greater variety of music than is still a question to be answered.

The increase in concert touring is another noted phenomenon in the music industry. As predicted by David Bowie in 2002, musicians have had to find alternative means of making a living in the music industry. Since illegal digital downloading has displaced a portion of album sales, musicians often view their music as a promotional vehicle for ticket sales and merchandise sales. In fact, the musician Prince even gave away copies of two of his albums, *Planet Earth*³¹ with the Mail on Sunday tabloid paper in 2007, and *20Ten*³² with the Daily Mirror and Daily Record in 2010. Both these giveaways were linked to upcoming concert tours, with a view toward promoting concert ticket sales, and a recognition that music is going to be free, regardless of what an artist does to control the distribution of their creations. Like the Grateful Dead, Prince was using his music as a complement to other goods, making his music free in the hopes of generating revenue via concert ticket sales. Mortimer, Nosko, and Sorensen (2012) investigate sales of goods that are complementary to albums. They find that sales of albums on compact discs declined, whereas the number of musicians performing live concerts has increased. As Bowie predicted, concerts are now the only unique experience left, and the modern musician should be prepared to tour extensively. Connolly and Kruger (2006) discuss the same issue, noting both the rise of incidence of total ticket revenue to the top ten performers from 1982–2003 and the increase in ticket prices over that same time span, far surpassing the increase in price of substitute entertainment such as sporting events, movies, and theater. Clearly musicians are keeping an eye on the revenues from a complementary good, i.e. concert tickets, one that is consumed with free music or illegally downloaded music. Shifts in the industry due to technology have an enormous impact on the way the music business

³⁰ Waldfogel (2010).

³¹ Allen (2007).

³² Paine (2010).

is conducted at both the industry level and at the level of the individual musicians themselves.

In microeconomic theory, we study producers and how they operate. Some industries have high startup costs (known as fixed costs), since they require expensive infrastructure (like machinery or factory buildings) to get a business up and running. The music industry has high startup costs, whether they are for manufacturing, production, engineering, or simply the act of writing lyrics and melodies. All these require infrastructure, either physical or intellectual, which means it is an expensive business to enter. These high startup costs act as a barrier to entry into the music industry, either for musicians or music manufacturers. Additionally, copyright protection acts as another barrier to entry into the industry. If a musician has a copyright on his piece of artistic work, this prevents others from reproducing it for performance or sale unless they pay a royalty fee to the musician. Protection over their intellectual property provides incentives for musicians to create new and better works in order to engage with as wide an audience as possible, and also creates financial incentives to produce the best work they can. Without the protection of copyright, the incentive to create quality musical works is lessened. Of course, the financial motive is just one reason to create music. Musicians may be driven by the desire for fame and recognition, or they simply receive positive welfare from pursuing this type of creative outlet. But all in all, copyright protection enables a musician to have control over the production and distribution of their musical works, and in effect creates a monopoly over its production.

The music industry's market structure has the characteristics of both oligopoly and monopolistic competition. It is an oligopoly in that there are a handful of large firms (the labels, particularly the big three, Universal Music Group, Sony Music Entertainment, and Warner Music Group) that produce and distribute the goods. It is also a monopolistic competition with many firms in competition to sell similar but differentiated products (the various musicians and bands competing by producing music that is differentiated from one another in terms of musical genre and style). These goods are slight variants of one another, all with the end goal of entertaining and engaging the listener. In a sense, musical works on either the song or album level are imperfect substitutes for each other. Obviously one rock song is not perfectly interchangeable for another rock song. Differences in musical structure and style distinguish the Beatles versus the Rolling Stones. However, all pieces of musical art seek to entertain