Stockholm School of Economics
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Does One Price Fit All?

A Study of Pricing in the Market for Music Downloads

Abstract

2005 saw a tripling of worldwide sales of music over the Internet and on mobile phones. With 420 million legitimately sold single tracks, accounting for 6 percent of global record company revenues, the $1.1 billion digital music market is beginning to take shape. Fully functioning services for buying music online legally are now available, with catalogues of songs counting in the millions. An important piece of the puzzle is missing, however. Despite strong theoretical arguments for differentiated pricing according to consumer demand, prices for music downloads are strikingly uniform. Focusing mainly on the Swedish market this thesis explores various obstacles and pitfalls to implementing differentiated pricing and attempts to answer the question why the uniform pricing regime persists. Representatives for the four major record companies are interviewed, as well as the CEO of the largest digital music retailer in Sweden. Behavioral explanations, transaction cost explanations and market structure explanations are considered. While none of the explanations presented can be singled out as a definitive answer to the question why prices are uniform, it is argued that they in combination likely limit the possibilities to implement differentiated pricing in the industry.

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1 Introduction

1.1 Background

The market for recorded music has experienced a serious downturn since the glory days of the 1990's. CD sales are at an all time low, piracy is rampant, and the record companies are often criticized for not adapting to new conditions in the market. Still, there is a hint of light at the end of the tunnel. 2005 saw a tripling of worldwide sales of music over the Internet and on mobile phones (IFPI 2006). With 420 million legitimately sold single tracks, accounting for 6 percent of global record company revenues, the $1.1 billion digital music market is beginning to take shape. Perhaps a sign of things to come, in early April 2006 the single "Crazy" by American duo Gnarls Barkley made music history by becoming the first download only song to reach the number one spot on the UK singles chart (BBC 2006b).

Fully functioning services for buying music online legally are now available, with catalogues of songs counting in the millions, far more than even the most well stocked brick and mortar retail outlets. It would seem that the industry is adapting to new consumption patterns, harnessing the possibilities of technology, and fulfilling the expectations of proponents of the digital economy. An important piece of the puzzle is missing, however. While the price for digital music is, for the most part, lower than for physical CDs it is no less rigid. In fact, for the most popular form of downloading, single tracks, it is even more uniform. Consumers pay the exact same amount whether they buy the latest single "Sorry" by Madonna or the track "Do Ya Feel", by one-hit-wonder Right Said Fred. In the most developed market, the US, prices for single tracks range from 88 cents to $1.09, with most retailers selling songs for 99 cents. Sweden is exhibiting the same general pattern, with prices of between SEK9.00 and SEK9.90.

Economic theory suggests that differentiated pricing, corresponding to consumer demand, can increase profitability for firms as well as enhance efficiency in markets. By using tried and true techniques of price discrimination combined with the possibilities of information technology the music industry should be able to improve the bottom line. This is not unknown by major players in the music industry. In fact, the uniform pricing regime lives on despite public statements from record companies that it is harmful to the industry.

Of course, introducing differentiated pricing is no simple matter, and theory provides various explanations for why we do not observe differentiated prices in several markets, even when products themselves are differentiated. In this thesis I attempt to analyze the music industry, and using economic theory try to find reasons for why digital music is priced uniformly.

The thesis is laid out as follows. The remainder of this section provides a brief background of the history of the music industry, presents the purpose, questions and delimitations of the thesis and discusses method and data used. Section two provides an overview of the Swedish market for music downloads today. Section three presents theory on the pricing of information goods. Section four discusses various pitfalls and obstacles to differentiated pricing in the market for music downloads. Section five concludes.

1.2 A Brief History of the Music Industry

The history of recording and reproduction of sound stretches back to 1877 and Thomas Edison's invention of the phonograph, which used a metal stylus and a cylinder wrapped in tinfoil that was rotated with a handle (Vogel 2001 pp.148-170). The earliest form of commercialization of recorded sound was nickel-operated "talking machines" in parlors. By the 1890s phonographs started to appear in private homes. The introduction of the gramophone by the Victor Talking Machine Company, which used discs instead of bulky cylinders, laid the foundations of a mass market.

The Great Depression, World War II, strikes and fierce competition from radio were stumbling blocks for the emerging music industry, resulting in slow growth until the 1950s. Innovations in recording techniques and the introduction of the vinyl LP initiated a wave of rapid expansion, with small companies entering to compete in what had become a concentrated market, dominated by a handful majors. The industry really took off in the 1960s, with the introduction of hi-fi stereo coinciding with the increased purchasing power of postwar baby boomers turned teenagers. This was also a time of consolidation, during which many of the small labels ended up being owned by a few corporate giants. The period of growth lasted throughout the 1970s, supported by the introduction of the portable cassette player, but ground to a halt in the 1980s. An aging population with apparent diminishing interest in new music combined with poor quality control of vinyl recordings caused a slump in sales. The introduction of the CD in 1983 and its widespread adoption in the early 1990s reversed the downturn and the industry saw a new era of growth, lasting until the end of the 1990s.

In June 1999 a new force entered the market in the form of Napster, a free file-sharing network dedicated to music (Peitz 2005). Increased broadband penetration combined with the adoption of the MP3-file format, a sound compression technique allowing large sound files to be reduced in size by a factor ten without audible loss of quality, contributed to the success of the service. While the music industry had had its bouts with piracy before, file sharing was adopted by the public at a staggering pace, and caught the record companies off guard. At its peak Napster had more than 20 million users, with up to 500,000 users concurrently active at any given time of the day (CNN 2000). By doing away with the physical delivery medium altogether, MP3-files and file-sharing networks made the copying and mass distribution of music almost effortless to any at least moderately computer literate consumer.

The Recording Industry Association of America (RIAA), a trade group representing the US recording industry, was able to close down Napster in 2000 through legal means (BBC 2000). By then, however, plenty of alternative file-sharing networks had cropped up, using decentralized network structures that made them less susceptible to legal measures. The war against piracy quickly turned into an expensive game of whack-a-mole, where the music industry scored pyrrhic victories against an ever-elusive enemy.

It became increasingly apparent that as long as no viable legal alternatives were available, a large and growing part of the public would continue to download music illegitimately through file-sharing networks. The major record companies first tried launching their own services, with short-

lived ventures such as Pressplay[1] and Musicnet[2]. Failing to win the heart of consumers, due to what was generally considered very high prices, lack of choice and very restrictive terms of use, the industry required the help of outside retailers to get the market going. In 2003 Apple opened its music store for business in the US, the iTunes Music Store (iTMS), which featured a large library of songs from all majors, an easy to use interface and an equally easy to understand pricing scheme; all songs were priced at 99 cents, with albums hovering around $9.99 (Apple 2003). Establishing itself as the legal service of choice, the iTMS sold 70 million songs during its first year of operation (Kawamoto and Fried 2004).

A number of other digital music retailers opened for business in the years after the original Napster's shutdown, including a legal version of Napster run by Roxio, Real Network's Rhapsody, Wal-Mart Music and Microsoft's MSN Music, most of which emulated the iTMS interface and pricing scheme for single track downloads. Unlike the iTMS, however, some of these retailers also offered subscription services, where users could listen to as much music as they wanted for a fixed monthly fee.

In parallel with the evolution of the digital distribution of music another multi billion-dollar industry made possible by the MP3-format grew quickly. No doubt fueled by the free access to music, digital music players, with the capability of storing hundreds of hours of songs in convenient devices, became the new way to listen to music. As the portable cassette player, made popular by Sony's Walkman, had sparked a new interest in music for the previous generation so did the MP3-player in the 00s. This time, however, it wasn't Sony but Apple that picked up the ball with the iPod, introduced in 2001 (Apple 2001). By no means the first digital music player, the iPod was arguably the first to get it "right".

The Swedish market for digital music downloads started in June of 2004, when eight retailers opened for business, all using the same technical platform supplied by InProdicon (Jonsson 2004). Single music tracks were priced at around SEK15, with some songs going for as much as SEK20. Apple's iTMS opened up its service to the Swedish market in May 2005, with a price of SEK9.00 for singles and around SEK90.00 for albums. The first retailer to offer a subscription service to Swedish users was Home Entertainment's Homedownloads, that lets users listen to music for SEK79/month since November 2005 (Appel 2005).

1.3 Conventions and Expressions Used

I will in the following use the expression *digital music sales* and variants thereof to mean legally paid-for music that is digitally distributed, that is, delivered to consumers in digital form without a physical medium. This is not strictly accurate, because songs on CDs are also digital in the sense that the sound is coded in ones and zeroes. I will use *Traditional music sales* and variants for music sold at traditional brick and mortar retailers. *Mobile music sales* refers to music bought with mobile phones, and is not to be confused with digital music played on portable digital music players. When

[1] A joint venture between Universal Music Group and Sony Music Entertainment. Acquired by Roxio in 2003 and was used as a base to for the new, legal Napster music service (Wired 2003).

[2] Backed by AOL, TimeWarner, Bertelsmann and EMI in venture with RealNetworks (BBC 2001).

needed, the term *desktop* sales will be used to distinguish between mobile sales and sales made to computers.

Downloading is a way of delivering music that transfers song files to a user's computer. Once downloaded, files can generally be listened to at any time without connecting to the service where they were bought. *Streaming* is a way of delivering digital music that requires the listener to be connected to a service. Songs that are streamed cannot in the normal case be stored on a computer for later, off-line, enjoyment.

Piracy and *file sharing* will be used interchangeably, despite the fact that some legal services use file sharing as a method to deliver songs to buyers.

1.4 Purpose and Question

The purpose of this thesis is to examine whether today's dominating uniform pricing regime in the market for music downloads is optimal from an industry perspective. A number of differentiated pricing schemes suggested by theory on price discrimination are presented, and various obstacles and pitfalls to implementing them are explored. With data gathered from interviews and secondary sources I attempt to answer the question *why* prices in the market for music downloads are uniform.

1.5 Method

In order to fulfill the purpose an exploratory research design is used, as the problem is largely unstructured (Ghauri and Grønhaug 2005, p.58). Since the study aims at understanding firm behavior a qualitative method was chosen, with semi-structured interviews as the main technique for collecting data (Ghauri and Grønhaug 2005, p.131).

Through literature review a number of candidate explanations for uniform prices were chosen. An initial set of questions was formulated around these candidates. The questions were refined during the course of data collection, as new insights were gained from interviews and secondary sources. This approach was used in order to make as full use as possible of the knowledge of the respondents, who varied in how they emphasized the relative importance of subjects brought up to discussion. However, this also means that not all subjects were covered as in-depth in every interview, and that interviews are not directly comparable.

Respondents were chosen so as to cover as much ground as possible, given time restrictions. Unfortunately no representative for wholesalers in the market for digital downloads was available for interview, leaving out a possibly important function in the market. It is also unfortunate that I have not been able to interview a representative for the iTMS, given the apparent importance of their role in the market.

1.6 Data Collection

The primary data of this thesis consist of prices for digital music downloads as well as interviews with representatives for firms active in the digital music market in Sweden.

Data on prices were collected for the top 50 selling tracks on three digital retailers[3] active in the Swedish market, at random intervals during the month of April 2006.

In order to better understand the reasoning of decision makers in the market five 45-minute interviews were conducted. Mikael Olander, CEO of CDON.com, the largest Swedish digital music retailer, was interviewed over the phone. Four interviews, with Swedish representatives of the major record companies, were conducted in person. These were:

- Samuel Arvidsson, Radio, Video & Digital – International, Sony BMG Music Entertainment Sweden.
- Michelle Kadir, New Media & Mobile Accounts Coordinator, Universal Music Sweden.
- Jacob Key, Business Development Director New Media Scandinavia, Warner Music Sweden.
- Anders Livåg, New Media Manager, EMI Music Sweden.

Respondents were selected by the respective companies, after initial contact had been made via mail and telephone. Data gathered from interviews with industry representatives have to be handled with care, as respondents can be expected to have agendas, and may be limited in what information they are allowed to reveal.

All respondents were informed of the purpose of the study and were given the opportunity to read a list of questions in advance (available in Appendix A). Interviews were semi-structured, as respondents were given freedom to bring up and elaborate on subjects they found relevant (Ghauri and Grønhaug 2005, p.132). Respondents were also invited to comment on the quality of the questions. Interviews were recorded, transcribed, edited for legibility and sent to respondents, who were given the opportunity to review, add to and revise the content as they saw fit. All interviews were conducted in Swedish, and the responsibility for any nuance or meaning lost in translation falls entirely on the author.

In addition to the primary data, secondary data sources in the form of news reports and public statements from industry representatives are used. As with interviews, such sources must be handled with care and cannot be taken at face value but must be compared and contrasted to relevant theory.

[3] http://www.cdon.com, http://www.poplife.se, and the Swedish iTunes Music Store.

1.7 Delimitations

The main focus of the thesis is the pricing of music downloads on the Swedish market. While interviews indicate that record companies act locally to a certain degree when negotiating with retailers in Sweden, the global nature of these companies mean that contracts are often signed on a global or regional level. For this reason, illustrative examples are sometimes taken from international (primarily US) retailers.

Only major record companies are interviewed, meaning that the views of independent labels are not represented. This focus was chosen mainly for reasons of convenience, but also because major labels own the rights for the bulk of popular music and can be expected to have more influence when it comes to pricing for the mass market. Nevertheless, this introduces a certain bias to the thesis, limiting the extent to which findings can be generalized to the market as a whole.

Mobile services are often cited as the next big thing in music downloads, growing fast as more music capable phones and services enter. In some parts of the world, notably the important Asian market, mobile sales is already the dominant way of legally downloading music. There is little doubt that this is an important aspect of music downloads, but for reasons of limited time and in order to keep a clearer focus on the core issues I will not go into any detail on this market. An advantage of studying the market for single track downloads destined for the desktop is that it, although still evolving, has stabilized somewhat as players without working business models have exited.

Only paid services are considered. There are many online radio services, which get their revenues from advertisement and donations, but this is beyond the scope of the thesis.

It is very likely that I have missed many interesting examples of alternative pricing schemes. The music industry is going through a period of transition, with many independent labels and artists challenging the conventions of the market. Again, time did not permit a full study of all available music services.

2 Market Characteristics

2.1 Market Overview

The music industry is going through rough times. In a recent report, the International Federation of Phonogram and Videogram Producers (IFPI) claim that global music revenues are down 16 percent since 2000, from $39.7 billion to $33.6 billion in 2004, mainly due to lower CD sales (IFPI 2006). Meanwhile the market for legal digital music has exhibited strong growth over the last couple of years. Single track downloading is the most popular way of purchasing music on the Internet, with some 420 million tracks downloaded in 2005, a twenty-fold increase from 2003. Subscription services, where customers pay a monthly fee to listen to as much music they want for a fixed monthly fee, is also growing with an estimated 2.8 million users in 2005, up from 1.5 million in 2004. Together with sales of music on mobile phones, total revenues from digital sales in 2005 were an estimated $1.1 billion globally, a tripling in value compared to 2004. Sales of portable digital music players, as a comparison, were worth an estimated $9 billion in 2005.

According to the same report there are 335 legal download sites in the world, most of which opened for business during the course of 2004 and 2005. Most supply local markets and operate in one or two countries, 20 are available in more than three countries. To this date, roughly 2 million songs and 165,000 albums have been licensed by copyright holders and are available legally for sale.

The US is the largest market for digital downloads, accounting for 353 million of the sold tracks in 2005. The US is also where new services tend to be launched, and has the widest range of available sales methods, notably subscription services. The majority of subscription sales are made in the US, with few services available in the rest of the world.

In Europe the largest markets are the UK, Germany and France with sales of 26 million, 21 million and 8 million single tracks in 2005, respectively. 200 music services are active in Europe.

In Asia mobile downloads are far more popular than desktop downloads, for example accounting for 96 percent of total digital sales in Japan. The rest of the world has not yet seen a large expansion of legal digital music sales.

Swedish music sales exhibit the same downward trend as the global market. According to figures from IFPI Sweden total revenues in 2005 fell by nine percent compared to 2004, netting at SEK996 million, with digital sales accounting for SEK21 million[4] (IFPI 2006b). Interviews indicate that digital sales during the past few months hover around 5 percent of total revenues for all major record companies. These figures do not separate mobile from desktop downloads, but according to interviews the split is roughly 50-50.

Although the market is fast growing, downloading music, legal as well as illegal, is still a fairly uncommon practice in Europe, according to a consumer survey performed by Jupiter Research for IFPI (IFPI 2006). An estimated six percent of European Internet users have bought music from a

[4] A number that unfortunately does not include iTMS sales.

legitimate service and four percent do so on a monthly basis. Eleven percent of European Internet users use file-sharing networks to download illegitimate music, about half of which do so on a monthly basis. According to the survey legal downloads are catching up with illegitimate downloads in the UK and Germany, while Swedish users still favor illegitimate P2P services. 22 percent of buyers of music downloads say they also use illegal file sharing services and 25 percent of illegal file sharers say they are willing to use paid services.

According to the same study file sharers and users of legal retailers alike use digital portable players to enjoy music, 45 percent and 29 percent respectively. Ten percent of European Internet users, approximately 23 million people, bought a portable music player in 2005, and six percent intend to in 2006.

2.1.1 Market Structure

Making songs available for digital sale is a complicated process. For the purpose of this thesis a greatly simplified overview of the main steps, as well as key players, based on Peitz (2005, p.363) is presented.

Artists create songs and sign contracts with *record companies*, which own *labels* specializing in different market segments[5]. Record companies are responsible for managing, recording, manufacturing, promoting and distributing the music. This market is highly concentrated, and is dominated by four record companies, listed in *Table 2-1* (bolded) along with Swedish and global market share in 2004. Beside the four majors a multitude of independent record labels are active in the market.

Table 2-1 Swedish and international market shares for major record companies in 2004 (Source: IFPI 2004 and IFPI 2005b).

Company	Swedish market share[6]	Global market share
Bonnier Amigo	10.60%	-
EMI	23.40%	13.4%
Playground	3.10%	-
Sony BMG	26.30%	21.5%
Universal Music	21.00%	25.5%
Warner Music	15.60%	11.3%

Record companies in turn license their artists' music to *retailers*. Because of the considerable resources needed to negotiate licensing contracts with copyright holders a number of *intermediaries* between record companies and digital retailers are active in the business (IFPI 2006). These act as

[5] For the rest of this thesis I will not make any distinction between record companies and record labels.

[6] Market shares for record labels recording sales with Grammofonleverantörernas Förening (GLF).

aggregators and distributors of songs, and in many cases offer "white label" music stores, which provide the back end to branded music retailers around the world. White label service providers include US-based Loudeye with European subsidiary OD2, 24-7 Musicshop, operating in Europe and the US, and InProdicon, operating mainly in the Nordic countries.

Retailers provide the storefront and sell music to *consumers*. Globally, the largest retailer is Apple's iTMS, operating in 21 countries and claiming 1 billion sold tracks since its launch in 2003 (Apple 2006).[7] Other international retailers of note include Napster, Rhapsody, Yahoo and Wal-mart.

Anti-piracy website www.pro-music.org maintains a list on legal digital music retailers around the globe. According to this list, the following services are active in Sweden:

Retailer	Catalogue	Service Provider	Offering
Åhlens	All majors	InProdicon	Single/Album
Bengans	All majors	InProdicon	Single/Album
Blip/TV4	All majors and indies	InProdicon	Single/Album
CDON	All majors	24-7 Musicshop	Single/Album
Göteborgs-Posten	All majors	InProdicon	Single/Album
Gunvor	All majors and indies	InProdicon	Single/Album
Homedownloads	All majors and indies	OD2	Single/Album/Subscription
iTunes Sweden	All majors and indies	Apple	Single/Album
Media Milkshake	All majors and indies	InProdicon	Single/Album
Milli Milli	All majors and indies	InProdicon	Offline
MSN	All majors	OD2	Single/Album
Musicbrigade	All majors and indies	InProdicon	Single/Album
Musicshop	All majors and indies	InProdicon	Single/Album
Poplife	All majors	InProdicon	Single/Album
Skivhugget	All majors and indies	InProdicon	Single/Album
Vodafone	All majors and indies	-	No longer active

Unfortunately this is not a complete listing of digital music retailers in Sweden. Many more stores have recently opened or are in the process of starting business, including MTV Nordic[8]. The list does, however, provide an overview of the types of services available and includes all the major intermediaries active in Sweden.

[7] This figure includes songs sold as part of albums.

[8] http://shop.se.mtve.com, powered by InProdicon, opened in December 2005.

Reliable figures on retailer market shares and sales are hard to come by for the Swedish market. According to Swedish analyst Mediavision CDON is largest with a 52 percent market share in digital music downloads, and the iTMS second largest with a 19 percent share, in the last quarter of 2005 (Nylander 2006). During 2005 CDON sold one million songs, at an estimated value of SEK10 million.

Digital music retailing is not generally considered a profitable venture at the moment (Wolverton 2006). Although exact figures are not readily available analysts estimate that record labels take a cut of 60-70 percent in licensing fees out of every song sold and banks about 10-15 percent in transaction fees (Hansen 2003). After adding costs for overhead, bandwidth, staff and marketing little is left for the retailer. Mikael Olander (CDON), confirms that their downloading service does not turn any profit at the moment, with margins on sold songs close to zero after licensing fees, royalties, bandwidth and bank fees are paid.

Besides buying songs from legal retailers consumers have the option of downloading music from illegitimate file-sharing networks. In order to combat piracy the music industry has taken more than 20,000 legal actions against file-sharers in 17 countries (IFPI 2006). The number of copyright infringing files available on the Internet in January 2006 is estimated by IFPI to be about 885 million. While still a very real problem for copyright holders there are some signs that the threat of piracy to the industry is somewhat contained. The number of files has been fairly stable over the past year, and is down by about 15 million since June 2005. The number was at a peak at 1.1 billion in April 2003, and has fallen despite an increase in broadband penetration of 139 percent in the time that has passed.

2.2 The Product

Swedish digital music retailers sell music either in the form of files that are downloaded to the customer's computer and can be played at any time, or in the form of access to streams of music that require the user to be connected to the service.

2.2.1 Prices

Data collected indicate that prices are very uniform, both within and between retailers. CDON and Poplife price single songs at SEK9.90 with few exceptions and the iTMS prices all single songs at SEK9.00. Prices on albums are somewhat more flexible, mainly depending on the number of songs included, with prices hovering around SEK90.00 on the iTMS and SEK99.00 on CDON and Poplife. Homedownloads offers a subscription service in addition to single track and album downloads, priced at SEK79 per month. The subscription gives access to streaming of most songs available. All retailers allow consumers to listen to 30-second previews, or *samples* of songs without any purchase or registration required.

Outside of Sweden some retailers sell more full-featured subscriptions, which allow users to download any number of songs at a flat fee. These songs can be played at any time, but the user is required to connect to the service at set intervals to verify that the subscription is active. When the user ends the subscription any downloaded songs become unplayable, essentially meaning that songs are rented. Some subscription services in the US and Europe allow users to transfer such rented music to portable devices, for an extra fee.

2.2.2 DRM and File Formats

In order to preserve the rights of copyright holders digital music files are generally sold with *digital rights management* (DRM) protection. Apart from limiting how many times a music file can be copied to other computers or burned to CD, DRM imposes restrictions on which devices and, in some cases, the time period or number of times it can be played. Swedish retailers sell music with mainly two forms of DRM, Microsoft's Windows Media DRM and Apple's FairPlay.

The different forms of DRM enforce the terms of use that consumers agree to when buying a copyrighted piece of music. Songs bought from retailers using Windows Media DRM can generally be copied to five computers, be burned to CD five times and transferred to a portable device up to five times.[9] For songs to be playable on a portable device the device needs to be certified by Microsoft. Apple's iTMS is the only retailer using FairPlay, which allows songs to be played on up to five computers, be burned to CDs in a certain order seven times and be played on any number of iPods.[10] No other portable devices than iPods can be used. The terms of use are subject to change by retailers, even retroactively. In 2004, for example, Apple decreased the number of times songs bought from the iTMS can be burned to CD from ten to seven (Kawamoto and Fried 2004).[11]

No DRM scheme is perfect, however, and software exists that "strips" protected files from DRM. Songs with DRM burned to an audio CD can generally be transferred back to a computer, removing the protection but reducing the sound quality somewhat in the process. Additionally, the so-called *analog hole* presents a threat to any DRM solution the industry implements (Peitz 2005, p.376). By capturing the music output after the signal has been converted from the protected digital stream to an audible, unprotected analog sound any DRM can be circumvented. This has drawbacks to digital copying and is more akin to copying a CD to a cassette tape. In order for the signal to not lose quality, special equipment is needed and the copying can only be performed in real time. After an initial high quality copy has been made, however, any additional copy will be a perfect, unprotected, unmarked digital file.

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[9] http://www.poplife.se/Magellan/pages/main.jsp?storeId=10151&link=poplife/faq

[10] http://www.apple.com/se/support/itunes/

[11] For doing this iTunes are under investigation by the Norwegian Consumer Council, Forbrukerrådet (Forbrukerrådet 2006).

DRM is integrated in the *format* that the file is sold in. Three formats dominate the market for digital music:

- WMA (Windows Media Audio) owned by Microsoft and licensed to retailers. Used by most retailers except for the iTMS. Protected with Windows Media DRM.
- AAC (Advanced Audio Coding) sponsored by Apple and used only at the iTMS. Protected with FairPlay.
- MP3 (Moving Picture Expert Group, Audio Layer 3) an unprotected format that is rarely sold through legitimate services.[12] MP3 is the format of choice for file-sharers because it rarely contains DRM.

All three formats allow different levels of *compression*. The amount of compression decides the bit rate[13] and affects the sound quality of the music file as well as how long it takes to download. WMA files are sold at a bit rate of 192 kbit/s and AAC files at 128 kbit/s. At any given bit rate the compression techniques are fairly equivalent, with a slight edge to the more modern WMA and AAC formats.

2.2.3 Music Players

To play downloaded music, a player is needed, either in the form of a software program or a hardware device, such as digital portable players. In order to play files with DRM protection players need to be certified by the DRM provider.

Software players include:

- Windows Media Player 10 (WMP) by Microsoft. Supports the WMA format and is available for computers running Windows.
- iTunes by Apple. Supports the AAC format and is available for computers running Windows and Mac OS X.

Other software players that can play WMA files with DRM protection are available for computers running Windows, but require WMP to be installed in order to do so. Only iTunes can play AAC files with DRM.

[12] Some retailers sell MP3 files with digital watermarks encoded into the file that make it possible to trace rogue files to the buyer, discouraging mass distribution.

[13] The amount of data used for one second of sound.

3 Pricing Information Goods

Recorded music is a prime example of an *information good*, defined by Shapiro and Varian (1999, p.3) as a good that can be digitized. Information goods have certain features that are important when assigning prices to them, both on the production side and on the consumption side. In the case of music, producing a master recording[14] is relatively costly, but after it has been made any additional copy is virtually costless. In general, the majority of the fixed costs of producing recorded music are also sunk; if a song does not sell, its production, marketing and promotion costs can rarely be recovered by selling the master recording (Shapiro and Varian 1999, p.21). The high fixed costs and low marginal costs of producing music means that traditional pricing methods based on cost make little sense when setting the price of a song. Instead, price must be set according to consumer value, that is, in accordance with consumer *willingness to pay*. In order for a consumer to properly value a song she must first listen to it, inferring that music is an *experience good* (Shapiro and Varian 1999, p.5).

3.1 Uniform Pricing

A copyright can be thought of as a "mini-monopoly" granted to its holder (Varian et al. 2004, p.55). Every piece of music is a unique, differentiated product facing a certain demand at every price. In reality the actual degree of market power of a single piece of music is weak, since many close substitutes are available in the form of other songs, or indeed other forms of entertainment. This means that the actual demand curve for most songs produced can be assumed to be relatively flat (Cabral 2000, p.70). For reasons of clarity I will for this theoretical review assume that any given piece of music faces a demand curve that is not perfectly flat. For illustrative purposes, demand is also assumed to be linear. In reality, of course, not all songs are created alike. The actual demand for different songs varies considerably depending on a multitude of factors such as marketing, genre, trends and position on sales charts.

According to basic microeconomic theory a monopolist maximizes profits by setting price so that marginal revenue equals marginal cost (Cabral 2000, p. 70). When marginal cost is zero, this becomes a question of setting the price that maximizes the area of the square in *Figure 3-1*, below. In this simplified scenario consumers valuing the song above the price set will enjoy consumer surplus corresponding to the area of the triangle marked CS in *Figure 3-1*. A proportion of the consumers, who would have bought the song at a price above marginal cost but below the monopoly price, are not served under monopoly. This state of affairs implies allocative inefficiency, illustrated by the *deadweight loss* (DW) in *Figure 3-1* (Cabral 2000, p.26).

[14] The original recording, which is used for producing copies of varying quality.

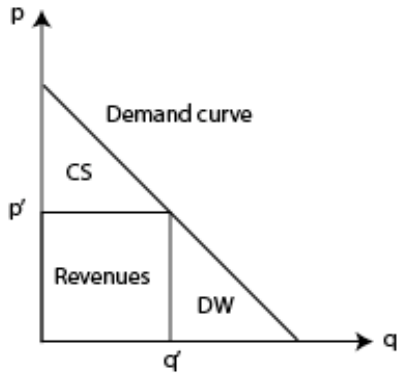

Figure 3-1 Uniform pricing.

Uniform pricing is not optimal for a monopolist. If instead of selling songs at one price the monopolist could charge consumers different prices, according to their individual valuations, revenues would increase substantially.

3.2 First-degree Price Discrimination

Price differentiation is important in digital markets for two reasons, according to Varian et al. (2004, p.12). Firstly it provides a solution to the inefficiency problem outlined above. Secondly, information technology allows for analysis of consumer behavior that is often prohibitively costly in traditional markets. The knowledge gained from such analysis can be used for sophisticated price strategies.

Personalized pricing, or first-degree price discrimination, means setting different prices for every individual consumer according to their willingness to pay, leading to full extraction of the consumer surplus (Shapiro and Varian 1999, p.39). As illustrated in *Figure 3-2* below, perfect price discrimination is efficient in the sense that it eliminates deadweight loss.

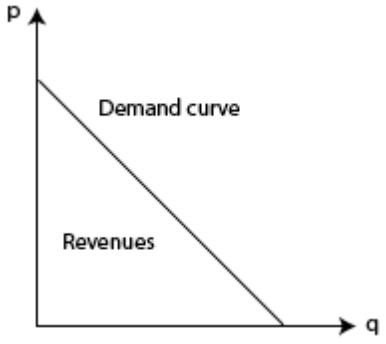

Figure 3-2 First-degree price discrimination.

Internet retailing does open up many possibilities for truly flexible pricing of music (Varian et al. 2004, p.12). By observing usage patterns, the response to promotion deals, which songs are sampled and bought, streaming habits and other behavior a music retailer can learn much about individual visitors, gauge the demand for songs and offer tailor-made deals to consumers based on this information. Jacob Key (Warner), describes some of the possibilities:

> "What is incredibly exciting today is that it is possible to get sales updates up to the last second. It might conceivably be possible to have some form of real time pricing, depending on sales of an item. Theoretically, different prices could be charged at different times of the day, and depending on the number of visitors. It is fascinating."

Of course first-degree price discrimination requires perfect knowledge about each and every consumer and is hardly realistic. Individual consumers' willingness to pay is notoriously difficult to measure, even with very sophisticated information technology. Not only does it vary between consumers, individual consumers also have different willingness to pay under different circumstances. There does however exist techniques to take advantage of predictable group behavior and to induce consumers to reveal their willingness to pay. Shapiro and Varian (1999) outlines a number of such pricing strategies for information markets.

3.3 Third-degree Price Discrimination

Group pricing, or third-degree price discrimination, means segmenting consumers into groups and setting different prices for each group, based on differences in price sensitivity (Shapiro and Varian 1999, p.44). This form of price discrimination requires that individuals in a group share some identifying characteristic, observable by the seller. Classic examples include student and senior citizen discounts, taking advantage of the fact that these groups have less disposable income and therefore are more sensitive to price.

An example of third-degree price discrimination is Napster's "on campus" program, offering discounted prices to students at participating schools in the US.[15] Most digital music retailers use another form of group pricing, based on geographical location. Retailers with shops in more than one country set song prices at a national level, regardless of exchange rates. By restricting consumers to buy only from stores in a country where they have a billing address (an observable characteristic), retailers are segmenting the market.

Sometimes sellers know that groups of consumers have different willingness to pay but cannot segment them based on external observable characteristics. Even when such information is unavailable consumers can be sorted into groups by inducing them to *self-select* (Cabral 2000, p.176).

3.4 Second-degree Price Discrimination

Versioning, or second-degree price discrimination, is widely practiced in both traditional and Internet markets (Shapiro and Varian 1999, p.55). By offering versions of a product, with different levels of quality and carrying different price tags, sellers can sort consumers according to what version they

[15] http://www.napster.com/napster_on_campus.html

choose to buy. Examples include charging different prices for hardback and paperback books, classes in travel and different versions of software.

Designing a well-rounded product line can be difficult and requires that versions be distinct from each other in order to prevent consumers with high willingness to pay from buying a low priced version. Such *cannibalization* can be avoided by lowering the price of the high-end version, reducing the quality of the low-end version, or doing both (Varian et al. 2004, p.16). Reducing the quality of existing products, creating *damaged goods*, sometimes means that the low priced version is more expensive to produce than the high priced version (Cabral 2000, p.176). As illustrated in *Figure 3-3*, when properly executed, versioning is welfare improving unless the social costs of artificially degrading a product outweigh the fact that more consumers are served.

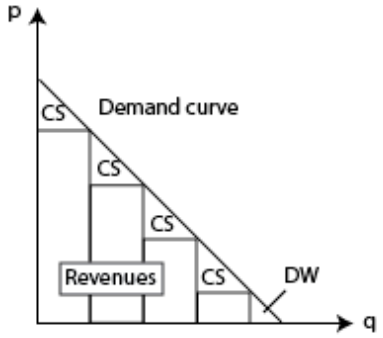

Figure 3-3 Versioning, four versions.

Digital music lends itself to several forms of versioning, along many dimensions of demand (Shapiro and Varian 1999, p.56). One is timeliness; most popular music is in highest demand when it is new. This can be taken advantage of by charging premium prices for new releases and offering discounts after the initial rush tapers off, a practice used in traditional music retailing.

Other opportunities for versioning are facilitated by the fact that music is sold as digital files. An uncompressed master recording can readily be damaged in different degrees to create versions of varying quality to be sold at different prices. Consumers can be expected to vary in how they value the sound quality of music files. Song files with high bit rate can be offered to audiophiles for use on expensive HIFI systems and low bit rate files offered to consumers with less discriminating ears.[16]

According to interviews, quality versioning is not something the industry is working actively towards at this point in time. Anders Livåg (EMI) does not rule out the possibility that this will come in the future, however:

> "… I don't think it is justified today. Right now there aren't really any devices available that can make use of higher sound quality. People who download songs generally listen to them in MP3-players and the like. But if customers demand better quality sound files we will of course offer that."

[16] Russian music retailer AllofMP3.com has an interesting take on quality versioning. Users of the service choose the amount of compression they want applied to a file and then pay for the amount of data they download. The legality of the service is somewhat dubious, however. AllofMP3.com allegedly operates under Russian law, but IFPI claims that the service is unlawful both inside and outside Russia and is working to shut it down (IFPI 2006, p.19).

DRM, apart from preventing piracy, can be used to create versions of song files that provide users with varying freedom to enjoy them, at different prices. Examples include pricing according to how many devices a song can be stored on, the number of times it can be played or if the buyer is required to be online when listening.

Mikael Olander (CDON) believes that pricing based on DRM versioning could be viable:

> "Yes absolutely. … I believe MP3-files should be more expensive, because you can pass them around as you see fit. A WMA-file should be pretty cheap, one might argue. But that is not the way it works today."

3.4.1 Bundling

Bundling is a form of versioning where a number of products are sold as a package at a single price (Shapiro and Varian 1999, p.73). This is a tried concept for the music industry; albums are bundles of songs. As in traditional retailing, digital bundling is not limited to music files, other value adding information goods can be added to song files, including but not limited to cover art, liner notes, lyrics and video.

A distinction is often made between *pure bundling*, where buyers must buy the bundle or nothing and *mixed bundling*, where buyers can choose between buying the bundle or the individual parts of it (Cabral 2000, p.178). Digital music retailers today offer mixed bundling for most artists. Some songs, however, are only available as single downloads and some only as part of album downloads.

Bundling increases revenues by reducing the dispersion of willingness to pay and making the demand curve flatter (Bakos and Brynjolfsson, 1999, p.1614). By virtue of the law of large numbers especially high and low valuations of individual goods are averaged out, with total variance decreasing as more goods are added to the bundle. Bakos and Brynjolfsson (1999) show that, under the assumption of zero marginal cost, a multiproduct monopolist receives higher profits from using a bundling strategy than from selling the goods separately, as illustrated in *Figure 3-4*. This makes bundling especially viable for information goods compared to traditional retailing.

Figure 3-4 Bundling of information goods (Bakos and Brynjolfsson 2000, p.67)

Because a large part of the music for sale at digital retailers is available as individual tracks a potential bundling method is to let customers make their own bundles, a form of mass customization (Shapiro and Varian 1999, p.78). This is not practiced to any large extent on the Swedish market. The iTMS lets users put together and share "iMixes", but charges the same price as if the songs would have been purchased individually.

Music subscription services provide an interesting example of large scale bundling. Since users have the choice of listening or not listening to any given song in the bundle, adding a song to a subscription can never reduce the total value of the service, although it may of course reduce the mean valuation (Bakos and Brynjolfsson 2000, p. 67). It is not always optimal from the seller's point of view to add every given good to the bundle, however (Bakos and Brynjolfsson, 1999, p.1622). Additional profit can sometimes be made from selling a high demand good separately. In practice this could mean that new songs in high demand should first be released as single downloads, and not be added to the subscription until after the early market has been *skimmed*.

This underlines the fact that differentiated pricing methods should not be viewed as mutually exclusive. In order to reap the maximum benefit from consumers' different valuations and willingness to pay, various pricing schemes can be used in combination. Several subscription packages can be offered, to which songs are added at different points in time, essentially versioning bundles. While estimating demand for individual songs may be very hard, estimating demand for different bundles has lowered variance, simplifying pricing. Another benefit of subscription services is that prices can be changed over time. Increasing the price of a song will only affect those who have not already bought it, but subscription contracts are up for renewal at certain points in time. Also, bundling the majority music for sale may free up resources to concentrate pricing and other marketing efforts on high profile songs or artists.

Interviews indicate that bundling, both large and smaller scale, is considered very viable. Jacob Key (Warner), for example, says that finding different forms of bundling is an active strategy of Warner Music;

> "It has been proven to work extremely well in the US, where it has been possible to charge somewhat differentiated prices by adding exclusive content that is not available elsewhere. The Internet is very transparent when it comes to prices, and competing retailers are only a click away. If the quality is the same, of course the customer will go where it is cheapest. But if there is some added value it is possible to increase the price."

3.5 Welfare Effects of Increased Variety

Beyond the welfare improving effects from increased allocative efficiency, differentiated pricing may potentially facilitate another transition made possible by digital retailing. Record companies hold the copyright for large catalogues of previously unreleased and out of print material, some, but not all of which has been digitized and put up for sale. The Internet provides an opportunity for such material to be made available, because unlike in traditional shops digital retailers are not restricted by limited shelf space.

A study by Brynjolfsson and Smith (2003) attempts to measure the welfare effect of increased variety quantitatively by comparing the number of books available at digital retailers with how many books are stocked at brick and mortar retailers. The study finds that the positive welfare effect from making available previously hard to find books is on the order of seven to ten times as large as the effect from increased competition in the book market.

While this number has to be taken with a grain of salt the study does provide an eye-opener to the potential welfare effects of digital retailing. For some consumers niche music can be of very high value. While a uniform price across all songs may not motivate the costs associated with digitizing

and marketing such material, being able to charge premium prices may well make the deal profitable. Jacob Key (Warner) agrees:

> "Yes, certainly. It is a question of potential revenues and costs. Many factors come to play when music is to be digitized. … It is a costly and time-consuming process. We want to feel that we can get that money back. There is no intrinsic value in digitizing everything. We have to make an estimate of what we believe is worth digitizing."

If differentiated pricing can provide record companies with incentives to make more music available, the impact on welfare may be even greater than is suggested by the static effects outlined in this section.

4 Analysis, Possible Explanations for Uniform Prices

In order for price discrimination to be possible, a number of conditions have to be met (Stole 2003, p.3). (i) Firms must have short-run market power, (ii) consumers must be possible to segment either directly or indirectly, and (iii) arbitrage taking advantage of differentiated prices must be infeasible. Section three argued that both (i) and (ii) are fulfilled in the market for digital music downloads. Condition (iii) is fulfilled given that DRM cannot readily be circumvented and/or provided laws against copyright infringement are upheld.

Theory on the pricing of information goods suggests that both efficiency and monopoly profits can be increased with price differentiation. Interviews conducted indicate that Swedish record companies and retailers are aware of the opportunities afforded by differentiated pricing, and that this is something the industry is working towards. A quote from Edgar Bronfman, Jr, Chairman and CEO of Warner Music Group at the Goldman Sachs Communacopia Conference in September 2005 hints that that this holds for record companies internationally:

> "There's no content in the world that has doesn't have some price flexibility … Not all songs are created equal. Not all albums are created equal. … That's not to say we want to raise prices across the board or that we don't believe in a 99-cent price point for most music, but there are some songs for which consumers would be willing to pay more. And some we'd be willing to sell for less." (Caney 2005).

Despite the apparent favorable attitude to differentiated pricing, prices for music downloads music are strikingly uniform. In this section I will outline and comment on a number of possible reasons why uniform pricing persists. Explanations covered in this section have been collected from economic literature, interviews and secondary sources. In the vein of Orbach (2006) possible causes for uniform pricing are divided into three groups; behavioral explanations, transaction cost explanations and market structure explanations.

4.1 Behavioral Explanations

4.1.1 New Market Considerations and Consumer Confusion

Buying digital music files legally has only been an option for consumers for a few years, and only in the last year has the market really taken off. The adoption of a new product or service can be viewed as a social learning process, where early experiences may have long lasting effects on consumer behavior (Geroski 2003, p. 56). When the first reasonably stocked legal music services entered the market, file-sharing networks had already been around for several years. The original Napster and its successors had become the *dominant design* in music downloading, setting standards and expectations as well as defining how digital music should interact with complementary products such as portable digital music players (Geroski 2003, p.110).

Fledgling digital music retailers faced the challenge of establishing a new pricing regime, under which music downloads would no longer be free. In addition they had to compete with an already established consumption pattern, where consumers could pick and choose any song they liked or had any interest in sampling. When Apple launched the iTMS it emulated the à la carte experience of

file-sharing networks as closely as possible, unlike the recording industry's earlier attempts to turn consumers to subscription services with very restrictive DRM. Remaining close to the file sharing experience arguably helped Apple getting its foot in the door, easing the transition from free to paid.

A related argument for uniform prices is that it keeps the service simple. One of the iTMS selling points is the service's ease of use. Jacob Key (Warner) believes that complicated services risk turning consumers off from buying music online:

> "Absolutely. We work together with retailers to make the stores easier to use. [...DRM...] does complicate matters somewhat, but is absolutely necessary in order for us to retain control over the music. A lot can be done to make services simpler. iTunes have been great at making it easy for consumers to find their favorite songs and at understanding what individual consumers like and recommend similar music."

A large number of choices may lead to confusion costs for consumers. In a study of how consumers react to being presented with a large selection of different flavor jams, Iyengar and Lepper (2000) find that too many options can lead to *choice overload*, resulting in fewer sales. Digital music retailers put vast catalogues up for sale, with available songs counting in the millions. Adding differentiated prices to different songs, versions of the same song and bundles of songs increases the choices presented to consumers even further. Apart from reducing the number of choices in absolute terms, uniform prices may potentially lower confusion costs by allowing consumers to choose between goods based only on their relative utility, without having to weigh in price into the mix.

While the new market and confusion cost argument may explain why early services had to emulate an already established file sharing experience, using uniform prices to keep the service as simple as possible, it does not provide a satisfying explanation why the uniform price regime should persist indefinitely. Differentiated pricing is not an unfamiliar concept for consumers in other, similar markets. Anders Livåg (EMI):

> "I think there will be different types of services, and that people will learn the ropes fairly quickly. As with CDs people will learn that new, hot music is a bit more expensive and that older music is a little cheaper."

From a retailer's point of view, Mikael Olander (CDON) says:

> "I don't think consumer confusion is a problem. The film industry and the game industry are doing it. [Differentiated pricing] is even used successfully on CDs, at least to some extent. It works very well on books. As long as the price is right, people will buy."

That is not to say that sellers should not try to keep pricing as simple as possible. Confusion costs increase with the number of choices available. These costs are highest for first-degree price discrimination, where every consumer meets a different menu of offerings. Simpler versioning and bundling schemes have the benefit of being easier to understand.

4.1.2 Perceived Fairness

Price discrimination in general, and personalized pricing in particular redistributes surplus from consumers to sellers. If used extensively, the practice can have a negative effect on the public image of a company. Public outcry against price discrimination in the US railroad industry in the 19th century forced the government to intervene and regulate pricing (Odlyzko 2003). Internet retailer

Amazon.com provides a more recent example. In 2000 the company experimented with charging customers different prices on DVDs based on various factors in users' configurations such as browser, the number of times the site had been visited and Internet service provider used (Rosencrance 2000). Users and press quickly caught on and Amazon stopped the practice, after receiving heavy criticism from consumers (Heun 2001).

Negative consumer reactions to firm behavior, as a result of the *perceived fairness* of prices, might potentially explain why full advantage of varying demand is not taken when pricing music. Central to fairness issues is the concept of the *reference transaction*, a precedent characterized by a reference price and a reference profit for a firm (Kahneman et al 1986, p.729). Consumer perception of the reference transaction is generally based on past transactions with a firm, and when there is no such history competitive prices serve as the natural reference.

The most obvious reference transaction in the digital music market is buying a song from a digital retailer, with the reference price being roughly SEK10. As Kahneman et al (1986, p. 730) show, however, reference transactions are not always unique, and disagreements on fairness are most likely to arise when alternatives can be invoked. At least two other reference transactions, which provide very close substitutes to buying a downloadable piece of music, are available to consumers; buying the same song on CD and downloading the song from a file-sharing network. Because consumers vary with respect to which price they view as the reference, the net effect of changing prices is hard to overview. Consumers with zero as reference price are likely to protest fiercely against any price charged. On the other hand the majority of music buyers has not yet turned to digital retailers and is probably less sensitive to changes in prices for music downloads.

Consumer judgment of the fairness of changes to a reference transaction, such as when introducing differentiated pricing, is to a large part based on how the outcome is perceived to affect the parties involved (Kahneman et al, p.731). A firm is not allowed to increase its profit above the reference by hiking prices without being viewed as unfair. This is especially true for firms taking advantage of market power to increase prices in response to increased demand (Kahneman et al, p.734). Consumer evaluation of changes in outcomes is to a large extent based on *naïve accounting*. People tend to be more sensitive to direct costs than opportunity costs and more sensitive to losses than to foregone gains. This means that fairness issues are subject to *framing effects*, the way changes are presented affects consumer perceptions of fairness.

Piracy, apart from providing some consumers with the reference price zero, complicates matters for the music industry further. In most markets the only way for a consumer to punish pricing perceived as unfair is to not buy the product from the firm and take their business elsewhere. In the market for music downloads the alternative for the consumer does not need to be go without a certain song, fairness arguments can be used to rationalize piracy and provides consumers with a means to punish the firm without incurring losses to themselves.

Although fairness issues, especially in light of a free substitute being available, can have a limiting effect on pricing, this is largely a marketing and framing issue. Samuel Arvidsson (Sony BMG) emphasizes that consumers must perceive prices as reasonable:

> "I hope consumers realize that they can benefit from [differentiated pricing] too, even if some products no doubt will become more expensive. … The music industry is faced with the incredibly important task of communicating with consumers without being perceived as greedy, because we are not. We want to make money, but not be perceived as greedy."

Perceived fairness should not pose an insurmountable obstacle to differentiated pricing, at least not in the long run. Reference prices are not set in stone, and perceptions of fairness tend to adapt to new situations over time (Kahneman et al 1986, p.731). If anything, the music industry should have an interest in making sure that a low reference price does not get more deeply engraved. Slowly increasing price over time on certain songs, for example pricing new releases higher than already available songs could gradually establish new reference prices as well as adapt consumers to differentiated prices. Bundling extra content can ease the transition by sweetening the deal, and somewhat conceal price discrimination (Odlyzko 2003, p.14).

Interestingly, price increases that are not motivated by corresponding increases in costs are perceived as less unfair when they are made to match competitors' prices (Kahneman et al, p.730). An important issue for the music industry is therefore which firm makes the first move towards differentiated prices.

4.1.3 Price as Quality Signal

While issues of perceived fairness can arguably be overcome by gradually introducing differentiated pricing, a more long-term concern is how consumers perceive the relative quality of songs carrying different price tags (Wolinsky 1983). Differentiated prices based on demand may have a *signaling effect*, potentially causing consumers to avoid low priced music. Prices of individual tracks may, for the same reason, affect the perceived value of an album when a mixed bundling strategy is used. Low prices for "filler" tracks on an album with perhaps one or two well-known hits may reduce the attractiveness of the bundle by lowering its mean valuation. When this is the case, pricing these songs strictly after their demand may be suboptimal.

The signaling effect can be expected to be especially strong for hit music, where individual consumer demand for a song is to some degree dependent on aggregate demand (Becker 1991, p.1110). When this is the case quality signaling may have self-fulfilling properties.

A closely related issue is how consumers perceive the quality signaling of *changes* in price (Orbach 2006, p.17). Firms must set the initial price before actual demand is known. Price increases for individual songs in response to unexpectedly high demand risk upsetting customers for reasons outlined in the previous section. Price cuts in response to low demand, conversely, may signal poor quality and deter consumers.

Interviews indicate that the quality signaling effect of price is not a major concern for record companies. Michelle Kadir (Universal) believes that while low prices may send unwanted signals to some consumers, the consequences are limited:

> "A person that hasn't heard a single song from an artist may get that impression, but for people who know what they like … I don't think it matters. If you like an artist you do. And if you are curious of an artist, it doesn't matter."

Samuel Arvidsson (Sony BMG) argues that a low price, rather than lowering demand, provides consumers with the incentive to sample new artists and argues that the practice works for traditional retailing:

> "New artists are in general priced lower than well known artists, in record stores. No one perceives John Legend's album as worse than Kent's. But John Legend isn't famous enough to cost as much as Bruce Springsteen or Justin Timberlake. From our perspective it's more important to get the artist out there than to maximize revenues."

Price as a quality signal primarily affects consumers when other sources of information on quality are not readily available. Music is an experience good, and provided that adequate sampling methods are available, there is little reason to believe that a low price would deter a consumer from buying a piece of music she enjoys. For hit music, heavily dependent on "buzz" and network effects changes in response to demand must be handled with care, limiting the freedom of firms to adjust prices *ex post*.

The discussion in this section mainly applies to differentiated pricing based on varying demand for different songs. The problem is less relevant for versioning based on sound quality and terms of use. For this type of versioning quality signaling is a wanted effect that helps consumers to self-select.

4.2 Transaction Cost Explanations

4.2.1 Menu Costs

Menu costs are costs related to making price changes, such as the costs of re-labeling products in physical markets. Prices are only changed in response to variations in demand when this cost is lower than the benefit of the price change, sometimes leading to *price stickiness* (Brynjolfsson and Smith 2000, p. 572). The higher the menu costs the stickier the prices.

Since changing a posted price on the Internet is as simple as changing a value in a database, it is often assumed that menu costs are lower in Internet retailing than in traditional stores. A study by Brynjolfsson and Smith (2000, p.573) supports this assessment empirically. Comparing Internet retailers with physical stores, they find that the former make price adjustments that are orders of magnitude smaller than physical stores. When selling physical CDs Internet retailers make adjustments as small as $0.01 compared to $1.00 in brick and mortar music stores.

According to interviews, however, matters are somewhat more involved than simply setting a new price for a song. Adjusting prices for the millions of songs available for sale requires more sophisticated systems than are available today. Anders Livåg (EMI) cites technical reasons as an obstacle to differentiated pricing:

> "That is one reason why we haven't gotten started with differentiated pricing. We can lower the price for, say, Robbie Williams, but then the change has to be implemented at retailers and wholesalers. That's possible with a small number of tracks, but we have half a million, which means that changing prices is very difficult. Will price adjustments take place simultaneously at all partners, for example? It is a limiting factor, but with time we are going to find solutions."

4.2.2 Contractual Costs

In addition to changing posted prices, systems must deal with compensating artists for their work. Samuel Arvidsson (Sony BMG) elaborates:

> "Systems today can't handle it, because it is not only about CDON lowering prices from SEK10 to SEK7, the change must be reflected in all reporting systems and the artists must make money too. … These are gigantic systems, handling all songs that have been made in the world. All systems must be able to keep track of everything so there is something left for the person who made the song. There are minimum rates. Today, far from all contracts are written to allow flexibility, but that is something we're working with."

Getting systems to properly interface and distribute revenues according to sometimes complicated contracts increase the cost of differentiated pricing. For older items in back catalogues new deals have to be negotiated, because contracts were signed before digital sales were even a consideration. Artist idiosyncrasies are another limiting factor. Some artists refuse to let their music be sold online, much less in the form unbundled albums. Other artists refuse to be sold at nice-price in traditional stores and are likely to do the same if differentiated pricing is introduced to the digital market.

While such factors may be stumbling blocks today, it is unlikely that individual artists, even very big ones, can by themselves stand in the way of a potentially profitable strategy for the music industry. Considering the bargaining power of the record companies, especially when signing new contracts, it is unlikely that contractual costs are important in the long run.

4.3 Market Structure Explanations

4.3.1 Oligopoly Price Discrimination

As argued in the introduction to section four, price discrimination requires at least short-run market power. While individual copyrighted songs can be viewed as mini-monopolies, the record companies who own them compete with each other. The music recording industry has exhibited varying degrees of concentration since its infancy in the 1890s. Since the 1960s the industry has become increasingly horizontally integrated, and is currently dominated by four global firms. In a study of release behavior in the music industry Alexander (1994) argues that record companies form an oligopoly with significant barriers to entry. This is consistent with the high concentration of the Swedish music recording market, as manifested by the Herfindahl[17] index of 0.205.

According to Stole (2003, p.1) economists generally agree that price discrimination does arise in oligopoly settings. Matters are, however, more complicated than in a pure monopoly setting. An oligopolist does not set prices independently, but must act strategically and take the reactions of other firms into account. Whether price discrimination is optimal for firms depends on whether the surplus extracted exceeds the profits lost from increased intensity of price competition (Stole, p.5).

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[17] The Herfindahl index equals the sum of the squared market shares of all firms in the market, $H = \sum (S_i)^2$. The inverse of the Herfindahl index gives the *numbers-equivalent of firms* (Besanko et al 2003, p.205).

The extent to which price competition is increased or softened by price discrimination in turn depends on the details of the market.

Focusing primarily on third-degree price discrimination in oligopoly Corts (1998) shows that price discrimination may lead to all-out competition and lower industry profits when firms rank consumer groups asymmetrically, that is, when firms differ in what segments they consider "weak" and "strong".[18] When this holds the industry as a whole benefits if it can commit to uniform pricing. This does not intuitively seem to be the case for the recording industry. In the discussion that follows record companies are assumed to be fairly symmetric in how they rank the profitability of consumer segments, and that price discrimination does not necessarily lead to all-out competition.

Industry profits from price discrimination depends on the extent to which record companies are able to collude and engage in *cooperative pricing* (Besanko et al. 2004, p.272). Facilitating factors for price cooperation in the recorded music industry, apart from firm symmetry, include high concentration and short detection lags. Digital retailing makes it easier to observe competitors' prices than in traditional retailing, which makes secret price cuts difficult. Furthermore, the high growth of the market increases the profitability of collusive behavior and lowers the relative incentives to deviate (Cabral 2000, p.130). Firms that compete in more than one market are more likely to collude, because it makes punishment in isolated markets possible (Cabral 2000, p.140). Major record companies compete in multiple markets, in many geographical territories as well as in other entertainment markets, such as films.

All else equal, the fewer the number of price-points to cooperate on, the less costly price cooperation is for firms. The more prices vary, the harder it becomes for record companies to observe and punish undercutting, and maintain collusion. The specific demand for an artist can be very hard to predict, especially for competitors that do not have information on the amount of money spent on marketing. Differentiated prices may tempt firms to undercut competitors in order to gain market share.

This means that any differentiated pricing scheme imposed to the market likely has to be fairly transparent between the major record companies, in order to uphold price cooperation and avoid price wars. For this reason it is unlikely that record companies will push for very complex pricing, and instead focus on more transparent price regimes in the form of subscriptions or pricing songs according to easy to observe rules, such as charging premium prices for all new releases.

4.3.2 Vertical Characteristics

Record companies do not sell directly to consumers, but license music to retailers. Looking at the retail side of the market, the assumptions of the Bertrand model of strategic decision-making offer a relatively good fit to the market (Cabral 2000, p.102). Output and capacity can easily be adjusted, as no storage is needed. All competitors carry the same basic product, with a few variations, and set prices simultaneously. Barriers to entry are low, as white label shops make it possible for aspiring

[18] Matters are more complicated still when considering the effects of first- and second-degree price discrimination. Unfortunately, due to time constraints, a discussion on this is beyond the scope of this thesis. Interested readers are recommended to read Stole (2003) for a survey on theoretical findings in oligopoly price discrimination.

retailers to enter the market without building up inventory or technical systems. The Internet is a transparent market with search and shopping engines reducing search costs for consumers looking for bargains.[19] Unlike traditional stores, who can have market power by virtue of their physical location, online retailers risk losing customers to competitors only a click away.

With many retailers competing in a Bertrand fashion, equilibrium retail price is set at the retailer's marginal cost (Cabral 2000, p.193). In the music industry this marginal cost is essentially the licensing fee, indicating that the pricing decision mainly lies with the record companies. According to this line of reasoning, in order to break up the uniform pricing structure, record companies must apply differentiated prices when they license music to retailers. The variation in price will then be passed on to consumers, by virtue of competitive pricing. Some of the benefits of specialized retailers adapting their prices to specific demand and potentially profitable opportunities for personalized pricing might then be lost.

According to Anders Livåg (EMI) all songs are priced uniformly to retailers. Samuel Arvidsson (Sony BMG) says that their licensing fees are not differentiated today, but believes that they will be in the future. Michelle Kadir (Universal) says that their prices are differentiated, with discounts offered for certain items in their catalogue, but not based on individual artists.

Mikael Olander (CDON) confirms that the licensing fees CDON pays are differentiated to some extent;

> "[Prices] vary somewhat, but above all they are very high. The record companies want us to raise prices to SEK14.90 or SEK19.90 and so on, but that is not possible today. There is a price out there, and it is not our job to raise it, it doesn't work that way."

The exact pricing used when licensing music to retailers is shrouded in mystery, and is a sensitive issue for record companies. All interviewed representatives of Swedish record companies stress that the final pricing decision lies with the retailers. Mikael Olander (CDON) agrees;

> "We set prices, absolutely. But we are of course constrained to a certain degree by the price we have to pay to the record companies. If they demand SEK100 for a song, we can't sell it for SEK10. Our margins are low as they are, already."

Record companies have reason to tread lightly when influencing the pricing decisions of retailers. In January this year the state of New York started an antitrust investigation on how major record companies influence the pricing of digital retailers, following public statements from record company executives that they intend to push for differentiated pricing (CNet 2006). All four major record companies have received subpoenas to hand over information to the New York Attorney General.

Marketing music downloads is important both for expanding the market and for making differentiation possible between retailers. With zero margins individual retailers have little incentive to market their service. Any investment made by a retailer to enhance the experience of the customer, such as building communities and recommendation systems, benefits competing retailers since consumers can get the recommendation and then make the actual purchase at the low price

[19] While I have not been able to find a reliable shopping agent for downloadable music, I suspect that this can be explained by the fact that prices are uniform. There is little reason to believe that such a service could not be designed.

competitor. This free-riding behavior creates an *investment externality*, which leads to underinvestment in the retail business (Cabral 2000, p.193). To avoid this externality, producers can use *Retail-Price Maintenance* (RPM), that is, impose a minimum price at which a given song can be sold. If this is possible, price-sensitive consumers will have nothing to gain from buying at another retailer. RPM also has the added benefit, from the record companies' point of view, that it softens competition between producers, if they can collude on an industry RPM price level (Cabral 2000, p.197) This effect of RPM makes it questionable from a welfare point of view, and while RPM could help retailers coordinate on higher prices, the practice is explicitly forbidden by law.

Major record companies have been accused in the past of price fixing through forcing retailers in the physical market to conform to a minimum advertised price (MAP) scheme, a form of RPM. In May 2000, the US Federal Trade Commission (FTC) found that the then five major record companies were using MAP to stifle competition (FTC 2000). According to the FTC, the record companies restricted retailers from advertising CDs at a lower price than the MAP. Any retailers failing to follow the restrictions were denied cooperative advertising funds, meaning that they would lose considerable amounts of money. The MAP was introduced in 1995-96 in order to fight the growing market for discount music retailers, which had led to a price war. The companies settled and abandoned the practice, but are since under greater scrutiny by the FTC.

While the Internet is generally considered a transparent market, the situation need not be as grim for digital music retailers. In some Internet markets there does seem to be some room for varying prices between retailers. Looking at price dispersion between homogenous goods on the Internet Brynjolfsson and Smith (2000) find that prices at retailers selling CDs and books vary as much as 47 percent. One possible explanation presented in the study is that consumers are heterogeneously informed of the alternatives on the market, and that search costs are not in fact zero. Consumers may only know of a few retailers, and do not perceive that the benefits of searching for options outweigh the cost of effort. Another possible explanation suggested is that retailers are heterogeneous, in dimensions such as brand and trust. As more people turn to buying music downloads it is possible that such factors will become even more important, emphasizing the need to establish a top-of-mind brand.

Nevertheless, given the current market conditions, it seems unlikely that retailers will be a driving force in implementing differentiated pricing.

4.3.3 Complementary Products and Lock-in

A potential way for digital music retailers to turn profits is to use music as a promotional tool for selling other products. In the US CDs are often sold at heavy discounts, sometimes below cost, to drive sales of other products. In fact, retailing powerhouse Wal-Mart is one of the biggest retailers of recorded music, with prices so low that they have forced some retailers dealing only in music out of the market (Cohen 2004). This is generally considered a problem by record companies, who fear that music may become commoditized and that market power shifts to retailers (Shapiro and Varian 1999, p.24). Jacob Key (Warner) expresses this concern:

> "[W]e want as many partners as possible that have music's best interest in mind, that don't view music as a means to sell other products. Music is our business. To sell phones, MP3-players or TVs is other peoples' business. We feel it is important that songs are not included so it feels like they are free when someone tries to sell a TV set."

The most prominent retailer using this strategy in the market for music downloads is the iTMS. Although reliable figures are hard to come by, the general assumption seems to be that Apple has a global market share of around 70 percent in digital music players (Borland 2006b). Margins are also assumed to be substantially higher for iPods than for music sold through the iTMS, with figures around 20 percent quoted (Orlowski 2005).

Interviews indicate that the major reason that prices are set at around SEK10 per song is because of the iTMS, and that Apple are not in fact making any money from selling music.

Samuel Arvidsson (Sony BMG):

> "… iTunes is not turning any profits, and that is because they make their money on iPods. Because they have set the standard at SEK9 everyone else who don't have iPods in their business model are forced to set prices at a level where profitability is very low."

Mikael Olander (CDON) agrees that the iTMS has set the reference price in the market:

> "It is iTunes that has set the price, and we have to work to raise it, I agree fully with the record companies that the price is too low. People are prepared to pay SEK25 for a ring tone, so something is not right when you can't charge SEK9.90 for a music single."

Digital music is sold mainly in two formats, WMA and AAC, and because devices and software that use one of the formats cannot play the other, the market shows signs of going through a *standards war* (Varian et al. 2004, p.38). As consumers build up a library of music in one of the formats *switching costs* are increased, which in turn may lead to *lock-in* (Shapiro and Varian 1999, p.104). According to Shapiro and Varian (1999, p. 116) even very small, incremental switching costs can be critical in mass markets. Apart from possibly confusing consumers and delaying the adoption of the services available, this has strategic implications for pricing and has affected today's market.

From Apple's perspective having a music store provides an opportunity to charge a premium when a locked-in consumer decides to buy a digital music player, a complementary product. This premium can be as high as the present value an individual consumer places on the music already bought at the iTMS, or at least the monetary value the consumer places on going through the inconvenience of converting the music to a new format (Shapiro and Varian 1999, p. 114). It is

apparent that Apple has much to gain from running a competitively priced music store, when selling the iPod. Lock-in is further reinforced by the fact that Apple, with iTunes, the iTMS and the iPod, offers a fully integrated service.

Apple's lock-in strategy may explain why Apple does not offer a subscription service. Music downloaded as part of a subscription is not owned, but rented, meaning that switching costs are only as high as the inconvenience of learning a new service. One potential way for competing retailers to weaken Apple's position can be to offer competitive subscription services, and possibly force Apple to go the same way, reducing incremental switching costs for consumers. Without the aid of record companies, however, this can be a costly undertaking as it may require offering *sweeteners*, such as monetary incentives or promotions.

In a recent development in France, a law has been proposed that may alter the balance of power. The law, which is still under debate, requires that consumers be able to convert digitally restricted material between different formats, and that format licensors have to provide easy to use tools to this end (BBC 2006). This can potentially have far reaching consequences for Apple's, or indeed any firm's, strategy in the digital market. Even if only France requires such software by law, it would probably be very difficult to deny access to the conversion software in other countries.

At the present, however, the low margins and small volume of the music market make it hard for other retailers, especially in Sweden, to unilaterally break the lock-in created by Apple. Mikael Olander (CDON) believes that the open character of the WMA format, by force of being supported by so many retailers, will do the work.

> "I believe it will be hard for [Apple] to make it on their own, in the long run. I am sure they have given this a lot of thought and seem to believe that it will be possible to keep on running their own race. But everyone against Apple should mean that they lose in the end. Other manufacturers have plenty of resources too, and if this continues my bet is that they will suffer the same fate as they did with the Macintosh computer."

The Swedish market is not as dominated by Apple as the US market, and the growing mobile market may well threaten Apple's lock-in. Mobile handsets are upgraded far more frequently than other consumer electronic devices, due to them being heavily subsidized by mobile operators.

4.3.4 Piracy

Piracy has already been mentioned in some of the above arguments, indicating that its effects work on many levels. File-sharing networks provide consumers with a free substitute that is in some ways higher quality than a legitimately bought piece of music, because it is not artificially damaged by DRM. Pirated music is only free in the sense that there is no direct monetary cost associated with it, however. The level of service is arguably worse; users risk not getting the songs they want because files are not named properly or because no one else on the network is sharing them. Users of file-sharing networks face the opportunity cost of the extra time taken to find songs they want, compared with legal services. There are also costs associated with the risk of getting viruses along with other security concerns related to opening up access to a computer to other users. Because of a recent change in Swedish copyright law, there is also a legal risk of getting fined and possibly sentenced to prison for sharing music (Justitiedepartementet 2005).

Economists analyzing how piracy affects music sales consider various effects, with ambiguous net results (Blackburn 2004, p.7). One is the substitution effect outlined above. On the sales enhancing side there are two main arguments. The first is that piracy makes sampling easier. Since music is an experience good, sampling makes it easier for consumers to properly value music before buying it, potentially increasing the likelihood that they will make a purchase. The second argument is that positive network effects can lead to increased willingness to pay. Blackburn (2004) attempts to merge these two potentially sales enhancing arguments and tests them empirically against the substitution effect on US CD sales during the period 1993-2004. The study reaches the conclusion that the effect of piracy differs with the popularity of artists. Unknown artists are likely to see more positive effects from piracy than popular artists. The average effect on sales is, however, negative due to the fact that popular artists sell more. As major record companies hold the copyright for most popular artists, piracy is likely to affect them more than it does independent labels.

Samuel Arvidsson (Sony BMG) believes that piracy does affect the pricing of music considerably, especially in the short run:

> "With a one year perspective it doesn't look good. But looking five, ten years ahead I believe it will look better. In my view it is a question of attitudes and values. It will be possible to convince the majority of people to not only believe that paying SEK10 for a song is ok, but also to act accordingly. There will always be a group of people that will not pay, ever … but you can get the majority to choose a better behavior."

Jacob Key (Warner) does not believe that piracy directly affects pricing. While he considers piracy a threat, he also believes that file-sharing networks can be used to determine demand;

> "It is a very exiting source of information that can be used in different ways. … It can be used to see if songs will become hits or not."

Piracy in all likelihood does limit the music industry's possibilities to effectively price discriminate. On a fundamental level the substitution effect of piracy increases the price elasticity of demand for legal music (Varian et al. 2004, p.75). This means that piracy decreases the opportunities for price differentiation. As for potential benefits from piracy, sampling to increase willingness to pay can probably be achieved with the samples already available at retailers, along with cheap subscription services. Positive network effects can potentially be achieved with recommendation systems and communities, without the negative side effect of sales substitution.

According to Mikael Olander free, legal songs can be used as a marketing device;

> "I am sure that it will become possible to give away music to listen to for one day or something similar. There will be a lot of sampling. … This is something record companies are interested in. If they want to launch a new artist they can give us files for free that we can offer to our customers do download at no cost."

Any differentiated pricing scheme will have to include some form of DRM and legal backing to have full effect. By increasing the cost of using illegitimate file sharing services through legal means, the industry can decrease the value of the "free" substitute.

5 Conclusions

Economic theory on the pricing of information goods suggests that differentiated pricing can increase the profitability of digital music as well as improve allocative efficiency in the market. Through price discrimination, sellers can take advantage of varying demand and extract surplus from consumers. Interviews with Swedish representatives from the four major record companies and the CEO of the largest digital music retailer in Sweden, as well as secondary sources, indicate that this is not unknown to decision makers in the industry. Despite this, prices for digital music downloads are almost entirely uniform.

In this thesis a number of possible explanations for this state of affairs are explored, divided into three categories: behavioral explanations, transaction cost explanations and market structure explanations.

Behavioral explanations, while certainly important when setting prices in the market, do not by themselves pose insurmountable obstacles to differentiated pricing. Issues of perceived fairness can probably be alleviated with marketing techniques, as they are subject to framing. As long as consumers are provided with the opportunity to sample music before they buy, unwanted quality signaling effects of prices should be possible to avoid.

Transaction cost explanations highlight some of the immediate problems the industry face in implementing differentiated pricing, but are unlikely to be very important in the long run.

Among the explanations presented, those pertaining to the market structure likely are the most important, both short and long-term. Price discrimination requires market power, which most retailers do not have today, due in large part to the transparent nature of the Internet. Given the vertical characteristics of the industry it does not seem likely that any retailer can raise price substantially over marginal cost. In order to turn profits, retailers must find strategies to differentiate themselves from each other, such as selling complementary products.

Record companies, on the other hand, have substantial market power. By forcing and enticing retailers to price according to demand they may be able to affect consumer prices indirectly. To do so, however, they need to overcome significant legal hurdles. Acting in a high profile industry, with strong political interests involved, the record companies have an eye on their every move. In order to profit from price discrimination record companies must also find ways to avoid increased competition from a more flexible pricing structure.

Piracy limits possibilities to price according to demand on many levels. DRM and legal measures are necessary conditions for successful price discrimination.

While none of the explanations presented in this thesis can be singled out as a definitive answer to the question why prices are uniform, in combination they likely limit the possibilities to implement differentiated pricing in the industry.

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Appendix

List of questions sent to record companies (translated).

Can you briefly present yourself and what you do at [company]?

What part of Swedish music sales is made up of downloads? Of your sales?

How does the Swedish market relate to the US, Europe and the rest of the world? What are the main differences?

Is differentiated pricing desirable?

If yes, how do you think differentiated pricing should be implemented? (Higher prices for new songs, higher prices for "hits", quality versioning, bundling, subscription services…)

If no, why not?

Is this a question that you work with actively at [company]? How?

What are the main obstacles to differentiated pricing?

How do you license music to wholesalers/retailers?

Does [company] use differentiated prices to wholesalers/retailers? How? To what extent?

Who sets the final price to consumers?

How are revenues from a download distributed?

Would you consider licensing music to a retailer using differentiated prices?

What freedom to set prices would such a retailer get?

Do you face any legal obstacles to influencing prices to consumers?

Is the price too low for music downloads?

What possibilities do record companies have to predict the popularity of a song? How do you measure this?

Record companies have valuable assets in the form of previously unreleased music, and music no longer available for purchase. Would differentiated pricing help make these available?

Is there a risk that differentiated pricing is "too complicated" for consumers?

What are your views on the relationship between price and how consumers perceive the quality of music?

Apple has a strong position internationally on both the market for music and the market for music players. What are your thoughts on this?

How does piracy affect the pricing of music?

Do you think we will see a standard format for legal downloads? Is this desirable?

How do you think prices for music downloads will look in five years?