9 June, 2014

Master's Thesis Cultural Economics & Entrepreneurship

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Old & New Music Competing

The Long Tail of Old Hits

Abstract

This thesis sets out to clarify the sales distribution between new and old music in the United States. Analysing the past decade of music sales, the shift from physical to digital, as well as the decreased importance of the album as a format, is evident. Less obvious, is the trend of increased sales of catalogue music, especially deep catalogue more than 36 months in release. This observation points to an important but often ignored trait of online music consumption. As opposed to the long-tail theory, which states that niche content will ultimately dominate sales in an online environment, adding time in release to the equation leads to a different discourse. In contemporary music consumption, the distribution of sales is shifting because old hits increasingly compete with current ones.

Keywords: music, catalogue, long tail

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1. Introduction

Music consumption has changed rapidly over the past decade. While most people were still buying CD's in 2004, today the bigger part of music consumption takes place online, with subscription streaming as the fastest growing format. The format, the price, the application of copyright and even the style of music itself has changed over the years and while all of these subjects have been thoroughly researched, time and again one aspect is missing in contemporary literature. The age of music consumed. Did the shifts in the music industry and the move from format to format induce changes in consumption? Does the number of available titles influence our preference? Could former shelf space restrictions have had such an influence on record sales that the unlimited shelf space of the new online and downloadable format has changed what kind of music is consumed?
The way in which Nielsen Soundscan presents its data on the U.S. music sales provided an opportunity to investigate this distinction commonly overlooked. For decades, Nielsen has subdivided the year-end sales data of multiple formats into current and catalogue music, which is why it is strange that this difference rarely receives any attention. Namely, sales distribution theories such as the long tail do not incorporate a time frame. Especially since digital music does not deteriorate, in theory new titles are in competition with all previously released titles. In a volatile industry such as the music industry it would seem strange not to include the age of a product. Doing so does have one important implication. If we want to link the long tail theory, sales distribution and data that distinguishes between old and new music, we have to be specific about definitions. The long tail theory distinguishes between hits and niche while it does not specify the age of those products. In contrast, this thesis distinguishes between new and old music without specifying the popularity of individual titles. Therefore, the implications of both approaches are different, yet related.

Through an extensive theoretical framework, the stage is set for the data analysis, the results of which have some valuable implications for the future of the industry. In the concluding chapter, theory and empirics are connected and lead to a plea for a change of discourse in contemporary research on music consumption.

2. Theoretical Framework

2.1. The Recording industry

The music industry consist of many different industries such as live performance, video's, merchandising, fan-base management and much more. This thesis is not about the music industry in its entirety. It is about the recorded music industry, or, the recording industry, which is just one of many parts of the entire industry. The recording industry however is concerned with the recording, production, promotion and distribution of music. Although multiple media formats exist, there is one common denominator, the musical work is protected by copyright, an intellectual property right that originates automatically upon creation. Copyright actually consists of six separate exclusive rights, the details of which are too extensive to go into at this moment (copyright.gov, 2014).

At this moment, it is more important to create a basic understanding of the market for recorded music. There are several universal traits of this market that influence its daily dynamics regardless of technological or judicial changes. Firstly, the supply of new works is inelastic to price. Which means that when prices for music decrease, the supply will not decrease proportionally but remain relatively stable. The latter trait distinguishes recorded music from other products. Moreover, in research on the relation between prices and supply of music, the quality of new music supplied also remains high. In the past decade, many authors have demonstrated how both the quantity and quality of the supply of music were not affected by illegitimate downloading (Handke, 2012; Towse, 2011).

However, both revenues and profitability in the established recording industry were severely affected by illegitimate downloading of music files (file-sharing). It was the combination of a data-compression format called MP3 and a networking format called peer-to-peer (P2P) which resulted in large-scale copyright infringement worldwide, which is commonly known as file-sharing or piracy. From 1999, when the file-sharing program Napster was Launched, many P2P networks were set-up and taken down through litigation shortly after but the market for physical albums plummeted regardless. Currently, we still experience the effects of the market downturn that was initiated at the start of this century. Throughout this theoretical framework, a chronological aspect will be preserved in order to show what caused the problems the recording industry is still dealing with today.

In the course of the past ten years, the consumption of music changed drastically because of internet related innovations. Online music stores such as the iTunes store shifted consumption from the classic album format to individual tracks. Instead of buying

an entire album, it has become customary to select your favourite tracks before buying anything. Moreover, in the digital marketplace prices dropped by approximately 50% compared to the physical market, with the new 99 cent USD unit price per track of iTunes leading the way. Prices had to be lower as file-sharing established itself as insurmountable. Illegitimate downloading had to be seen as competition to legitimate services. Although non uniform pricing could still raise revenue, non price competition in the form of recommendation services and efficient interfaces were seen as the most effective antidote to illegitimate file-sharing (Sinha, Machado & Sellman, 2010).

In the mid 00's however, restricting file-sharing was priority number one for the industry that was losing revenue fast. Through digital rights management (DRM) software, which was negotiated as a precondition for distribution by the major record labels, the possibility of sharing tracks bought online was restricted. After years of expensive upkeep of this system, it was ultimately dropped because it had no effect on file-sharing (Jobs, 2007; Pikas, Pikas & Lymburner, 2011). Moreover, research has shown that consumers have a higher willingness to pay for the right to copy a musical track. Restricting that right leads to a disproportionate opposite effect (Chiang & Assane, 2009).

Another innovation changed music consumption once again. Streaming services such as Spotify, which was launched in Sweden in 2008, changed the business model to a subscription service. Yet again this had major implications for the established industry. Consumers were not paying for owning a few tracks, but for the access to millions of them. More precise, consumers never owned tracks, they bought the right to use them for private, non-commercial purposes. With the purchase of an iTunes MP3, the consumer could listen to it as many times as he or she wanted. Nowadays, streaming services with a subscription model are charging a monthly fee for the access to million of tracks, indirectly they charge the non-paying customers through advertisements. While selling access to tracks to consumers, in fact they are selling access to target groups to advertisers. The latter model also referred to as the 'freemium' model. In principle, both groups pay for each time they listen to a song. Simply put, the monthly fee divided by the play count is the charge per play. Consequently, the real change is how both charge and payout has shifted from 'per track' to 'per play'. With this transformation, the market shifted from selling (partial) property rights to (time-based) access rights (Rifkin, 2000; Waelbroeck, 2013). After a slow startup, mainly because of friction in the area of copyrights and royalty fees, by 2011 Spotify was released in the U.S. and is currently boasting over 40 million users worldwide of which 10 million are paying subscribers (Billboard.com, 2014).

2.2. Major Changes

Why is it important to investigate the background of digital music formats and their market influence before analysing the current industry? It is because the music industry is infamous for its corporate inertia and horseless carriages. Problems embedded in an industry that has been selling music as an album on physical formats for over 50 years since the first vinyl record was commercially produced. The business model that resulted has not fully adapted to a highly competitive digital world. Therefore, an understanding of the recording industry's history is crucial to solving today's problems.

The most notable changes to the business model for selling recorded music are related to technological changes. Firstly, digital distribution has led to dis-intermediation. In other words, all the middle-men such as record stores, logistics, promotors and even record labels have lost a part of their market because of the shift to online consumption. Secondly, because the online record store has unlimited inventory, re-intermediation in the form of blogs, recommendation systems and online licensing and distribution was needed in the current day and age. Summarising, the intermediaries did not leave, they changed and with them, so did the financial model. While the CD commonly cost 70% of its retail price to produce and distribute. The online iTunes store delivers 70% of its track price to the rights holders. With that margin, iTunes set the standard, and as an indirect effect, most current day streaming services maintain the same payout rate to independent rights holders (Geiger, 2014; Worstall, 2013). However, it remains unclear whether large rights holders receive preferential treatment. Summarising, the aforementioned developments were good for independent rights holders but not for the established intermediaries. Nevertheless, transaction costs because of copyright enforcement remain a big obstacle for the adoption of new business models. Mainly because every single digital retail outlet implies a unique licensing agreement with every supplier for which all separate track sales and streams have to be administrated. Therefore, reproduction and distribution costs are practically zero while licensing costs remain relatively high.

But why has copyright become such an obstacle? Three reasons stand out. Firstly, in stead of being a composers' instrument, as it was originally intended to be, it has become a corporate instrument. In 2013 there were three companies controlling over 90% of revenue in the U.S. music market: Universal Music Group (UMG), Sony Music Entertainment (SME) and Warner Music Group (WMG) (Nielsen, 2014). These three major labels control vast catalogues of copyrighted material. In negotiations, that catalogue serves as leverage. For example, the major record labels forced Apple to develop DRM software as a precondition for distributing their catalogue. More recently it took Google two

years to launch its DRM controlled streaming service ‘Google Play Music’ in Europe because the European Union Cartel Authorities needed more time to review the deals between the three major labels and Google. It is likely to assume that the major labels were anticipating the U.S. deal with Google as Spotify's U.S. release was also delayed by two years until mid-2011 because of problems with the copyright negotiations with the major labels (European Commission, 2012; Manger Cats, 2013; Spotify.com, 2011). In other words, copyright as a corporate instrument of market power can slow down developments considerably. Secondly, over the years, copyright has become more strict, currently extending copyright control to 70 years after the author's death or 100 years for works for hire, while copyright started with a maximum of 28 years after registration in 1790 (copyright.gov, 2013). In this case the term ‘registration’ implies that copyright was not an automatic right at that time. The term is crucial since a short time frame of exclusionary control would not provide enough incentive for the dissemination of more creative works while too long a time frame would clog up the market, affecting competition and leading to disproportionate market power. Thirdly, copyright consist of six different and separately enforceable rights. However, in law and trade it has become customary to treat all six copyrights as one package. The so called “all rights reserved approach”. Many authors have propagated that a more hybrid approach would lower transaction costs and thereby make the recorded music market more efficient. Mostly new music would be eligible for this approach as many older titles are already part of ‘all rights reserved’ contracts. An example of the hybrid approach is ‘creative commons’ (CC), a system in which any musical work can be digitally ‘stamped’ to show which rights are reserved and which are not. Summarising, in its current application, serving as a corporate instrument with extended scope while reserving all associated rights, copyright can be said to have the opposite effect of its intention (Balganesh, 2009; Lessig, 2008; Manger Cats, 2013; Russi, 2011)

In the context of the research in this thesis the latter claim is even more potent. In an online market for music, competition is not restricted to the inventory of a brick-and-mortar CD store. Consequently, every new title competes with all previous ones, which makes copyright’s term especially relevant. The combination of increasing broadband internet penetration and copyright’s term and scope is extending the role of catalogue music as a revenue driver. However, as copyright was intended to incentivise the creation and dissemination of new creative works, the virtually unlimited extension of competition because of copyright’s term and scope does not serve that purpose. Consumers will not be able to see the trees for the forest and barriers to entry will rise for new artists

(Balganesh, 2009; Lessig, 2008). Already in 2010, around 65-70 per cent of music played on Spotify was catalogue content, according to Spotify's CEO Daniel Ek (IFPI, 2010). Naturally, we cannot accept this quote as evidence for a trend of increased catalogue music consumption inherent to online distribution. Therefore, this thesis sets out to investigate whether there is a significant trend of increased catalogue sales in online music.

How to deal with copyright and the transaction costs it induces is one of the main issues in today's recording industry. Before analysing market dynamics, this issue has to be understood in detail. Although copyright does not imply a specific price in law, in economic theory it does, resulting in pricing above marginal costs of production, which would be the price in a market of perfect competition. Because every musical work is considered to be unique, rights holders have a monopoly on their own work. The music market is therefore one of monopolistic competition in which there are no perfect substitutes. Which is one of the reasons for the highly concentrated oligopoly of three record labels in the U.S.. Although there is a limit to price setting due to overproduction of reasonable alternatives, prices are well above marginal costs of production. This kind of monopolistic price setting does imply that the consumers willing to pay less than the set price but still more than marginal costs are not served by this market. This phenomenon is called the 'deadweight loss of copyright'. Despite the negative effects, file-sharing did succeed in serving the consumers willing to pay less. We could say that, as a result of file sharing, the lower average price of recorded music has resulted in a bigger audience, thereby serving more consumers and expanding the market. The future will tell if the newly acquired audience for online music is willing to pay for better services through legitimate business models (Balganesh, 2009; Hougaard & Tvede, 2009).

In order to reduce repetition, for the rest of this thesis, file-sharing, or music piracy, will be treated as a given fact. We will base the analysis on the notion that countering piracy will induce more costs to the industry than the revenue drop it allegedly caused. One of the reasons for this notion is that decreased piracy does not imply an increase in profit (Bhattacharjee, Gopal, Lertwachara & Marsden, 2006).

2.3 Today's future is Streaming

Presently, digital formats account for 64% of revenue in the U.S. recording industry. Streaming takes up 21% market share overall (Friedlander, 2014). These numbers indicate that the focus of music consumption has changed permanently, from physical to digital. Meanwhile, the overall market share of iTunes dropped considerably, implying increased competition in the download market because early adopters are moving from one format to another (Bloomberg Businessweek, 2013). Although the shifts in consumption in online markets are relatively new, the indirect network effects that cause these shift are not. There are many parallels to be found in theory on standards wars and market tipping of, for example, hardware/software markets (Dubé, Hitsch & Chintagunta, 2010). The indirect network effects are externalities that originate when there is an increased benefit to using one format or standard over another because others are also using it. Which is especially relevant in an online world of communities and social media. Firms employ penetration pricing and lock-in strategies anticipating the acceleration of sales after a certain critical mass is reached and the market 'tips'' towards one standard. The continuous lowering of prices and the "package deals" made for music subscription services particularly in the mobile market are an example of firms expecting the market to tip, investing in their future by putting market share before profit. This strategy can be clearly deduced from Spotify's growing losses in spite of successful market expansion (Sisario, 2013). It may even be proof that subscription services cannot provide the revenue to cover costs in general. In contrast, online radio stations in the U.S. do make profit because of less strict licensing regulations, while offering a similar experience to subscription streaming (Nemec, 2009). The question remains if a 'winner takes all' strategy resonates with the future of the music industry. Will it be a one standard market or will all formats and services coexist? Opinions in literature are widely divided on this subject, although there are strong arguments supporting the theory that multiple asymmetric networks can indeed coexist in equilibrium (Ambrus & Argenziano, 2009).

2.4 Shelf Space & The Long Tail

The aforementioned market dynamics have provided the foundation on which to go further into detail. Namely, there are more subdivisions of consumption than just format. For example, how big is "a hit" now that supply is virtually unlimited? Do sales show a different distribution because a typical brick-and-mortar store has limited shelf space and a digital online store does not? Herein lies the principal theme of this thesis. The following theories will illustrate the main focus of the data analysis thereafter.

In the physical market, inventory decisions have to be made. Estimates point to an average offering in brick-and-mortar stores between 5,000 and 15,000 titles. Which is similar to the top one percent of titles on offer at Rhapsody, the first subscription based online streaming service still operational to date. At Rhapsody, the top one percent of plays accounts for 32% of plays. Because inventory induces costs, the most popular and therefore profitable selection of music is bought in. However, it is unclear if these physical inventory decisions resemble the consumer's preferences. Much in the same way, online retailers of physical formats are bound by shelf space restrictions. Typically, they provide about 250,000 titles, which, compared to the Rhapsody example, is similar to the top 20% of titles on offer, which at Rhapsody accounts for over 80% of plays (Brynjolfsson, Hu & Simester, 2011; Elberse, 2008; Rhapsody.com, 2014).

It is important to note that Rhapsody had 1 million tracks on offer in 2008. Although the offering is much larger than a typical brick and mortar retailer, it still displays a highly concentrated sales distribution. A small percentage of the offer accounts for a big proportion of sales. In this case the distribution resembles the Pareto Principle, also known as the 80/20 rule. A widely accepted assumption is that the unlimited shelf space of the internet would disperse consumption away from hit products resulting in a far less concentrated distribution, mainly because the niche products are now more accessible. With 20 million tracks on offer at the leading contemporary streaming services, something was bound to change.

Anderson (2006) anticipated the change and wrote about the internet potentially changing consumption to more niche products in stead of mainly hit products. The author claims that the combined market share of niches could outgrow the hits. In other words, selling less of more. Although there is increased attention for niche products in movies and music in absolute terms, the overall supply has also increased, as a result of which the relative increase in attention for niche products is not as big as expected. On this subject the evidence in literature is often conflicting, mainly because online markets do not necessarily compare easily (Tan & Netessine, 2009). For example, Elberse (2008) contends that although more niche products are consumed, even heavy consumers of niche products value and consume hit products more. On the other hand, Brynjolfsson, Hu & Simester (2011) assert that there is such an opportunity in the IT behind recommendation systems that sales will become less concentrated for years to come. Though one of those theories may be true, especially in music, the effects of file-sharing, copyright and technological development are too big to form a concrete conclusion on the long tail effect. Even worse is the transparency of sales data of the highly competitive firms

in the music industry (Goode, 2012). On top of that, millions of songs on offer are not even sold or played, which has two consequences (Spotify.com, 2014). Firstly, it indicates a limit to the increase in attention for niche products. Secondly, if unsold songs are included in the relative analysis of the long tail effect, it would imply an increased sales share of hit products (Brynjolfsson et al., 2011). Summarising, although there is an obvious increase in both the number of titles supplied and consumed, there is no consensus in literature about the implications of those changes for the distribution of music sales. Moreover, though Anderson's claim of 'selling less of more' may be true, we cannot draw conclusions on whether these products are hit or niche products. Which is why this thesis will distance itself from that choice of words to investigate how the age of titles may have changed over the years.

3. Method

3.1 Research Question & Hypothesis

The main assumption behind the following analysis is that traditionally, sales of popular music on physical formats consisted mostly of current music because of inventory limitations. Which would imply that a digital format with no restrictions because of inventory costs logically results in increased consumption of catalogue titles, simply because they are available. Which leads to the main research question:

Is there a trend towards a bigger market share for catalogue music in the United States, and for which formats?

The research question leads to the main hypothesis:

For the past ten years the United States music market has shown a trend towards an increased market share for catalogue titles coinciding with increased online consumption.

3.2 Data Collection & Justification

This thesis is based on a distinction commonly overlooked in academic research on the music industry: the distinction between current and catalogue music. This distinction, as used by Nielsen Soundscan in its reporting on the U.S. music industry, provides an opportunity to research the distribution of sales between new and old titles. Current refers to music in release for 18 moths or less. Catalogue refers to music more than 18 months in release or older. Finally, deep catalogue refers to a subset within catalogue of music more than 36 months old. Nielsen has provided year-end reports on the sales of music for more than 20 years. The reports are based on point of sales (POS) data from 39,000 retail outlets globally. POS data implies that only actual sales are measured when barcodes are scanned at “point of sale”. The barcode refers to the unique product code (UPC) of each album or single which is registered in the store’s inventory system as well as Nielsen’s database.

There are two traits of the Nielsen data that make it especially appropriate for analysis in this thesis. Firstly, Nielsen reports units and not revenue. For example, revenue may have fallen while the number of units sold is rising. Especially considering a longitudinal approach, effects such as inflation, price changes and format adoption can have such an effect on revenue data rendering it unsuitable for analysing sales. Especially illustrating is the effect of the physical album price. Apart from the decline in units sold over the years, the price of physical albums has also dropped, which also has an effect on revenue. Secondly, POS is the most accurate kind of sales data available in terms of timing. For example, the Recording Industry Association of America (RIAA) measures shipments instead of sales. This implies that, especially for physical formats, the timing difference between the two could mean that sales go up while shipments go down. The data shows this effect, as the U.S. physical market declined in the first decade of the 21st century, the relative decline in shipments (RIAA data) was bigger than the relative decline in sales (Nielsen data)(Nielsen.com, 2014; RIAA.com, 2014). A widely accepted explanation for this effect is the reduction of inventory throughout the physical market combined with developments in logistics such as “just in time” (JIT) inventory management. Simply stated, retailers can order less, but still sell from inventory, which has different effects for different reporting standards. Summarising, the Nielsen data represents consumer behaviour most accurately without distortions due to price or timing differences. It will therefore be the starting point of each analysis.

In order to provide an extensive overview of the music industry, the main data set consists of current, catalogue and deep catalogue sales figures in millions of units for

overall albums, physical albums and digital albums sold in the United States. For digital tracks, only current and catalogue data is available. A financial perspective is added by means of RIAA data on the total physical and digital value (revenue) of shipments throughout the last decade.

Unfortunately, there is limited data on streaming, let alone on the exact way in which new and old music are consumed through streaming services. However, adding RIAA data on the streaming revenue proportion of the entire market could help deduce other market trends, albeit not on the exact distribution of music streaming consumption. To provide context, additional variables were added. The U.S. gross national income per capita (GNI) was added, to add a socio-economic perspective, as it allows us to control for the effect of overall economic circumstances (Worldbank.org, 2014). Finally, to be able to measure the effect of digitisation, the household broadband penetration in the U.S. was added based on data from the Organisation for Economic Co-operation and Development (OECD) (OECD.org, 2014).

3.3 Time-domain

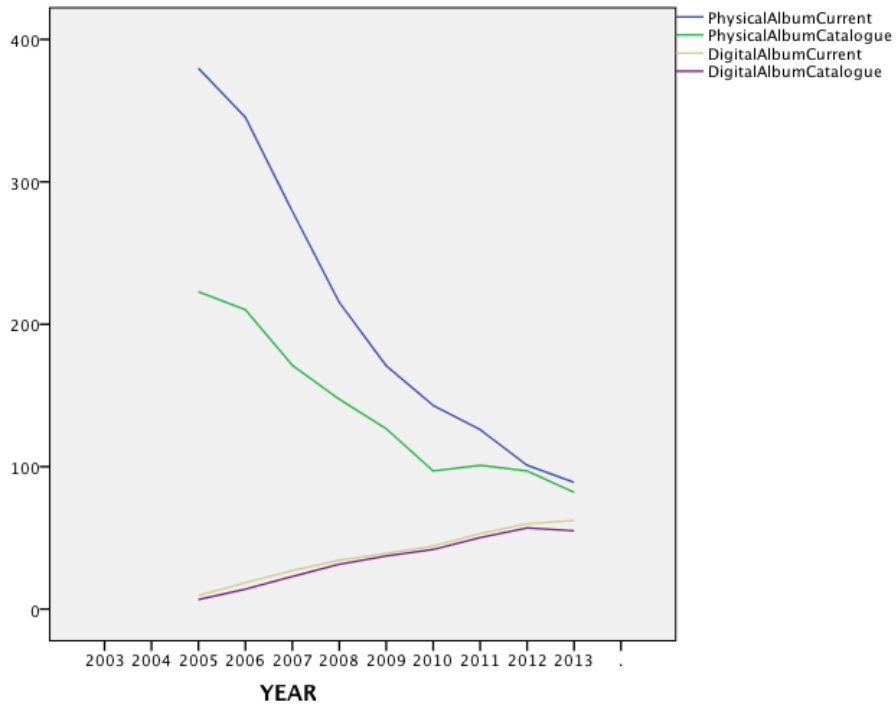
The data analysis in this thesis is straightforward and descriptive, therefore most methodology will be described within the analysis itself. However, some important traits of the data have to be discussed before we start. Namely, although year-end reports from as far back as 2004 were collected, Nielsen did not report on specific categories till 2005. Moreover, formats such as digital albums were not even reported before 2005 and reporting on current and catalogue sales of digital tracks started as late as 2009. For this reason, some of the analyses are based on ten years of data, such as overall albums and total physical market value, while other analyses are based on eight years of data or less. Summarising, because many related variables were used that provide context for a ten year period between 2004 and 2013, this thesis can be regarded as an analysis of a ten year time-frame. Wherever data falls short, it will be reported clearly.

3.4 Data Analysis

Observing the absolute data is the basis of a clear understanding of U.S. music sales. Much in the same way as the empirical and statistical work was done in preparation of writing this thesis, this chapter of observations and trends will also follow an order, from simple absolute observation to more complicated relative and derivative statistical analysis. First, the absolute data will be described. Secondly, the percentage change for each category and format will be described. Thirdly, we will come to the main event, the percentage market share of current versus catalogue. Finally, some statistical analysis will help to assess whether there is a significant trend to be found.

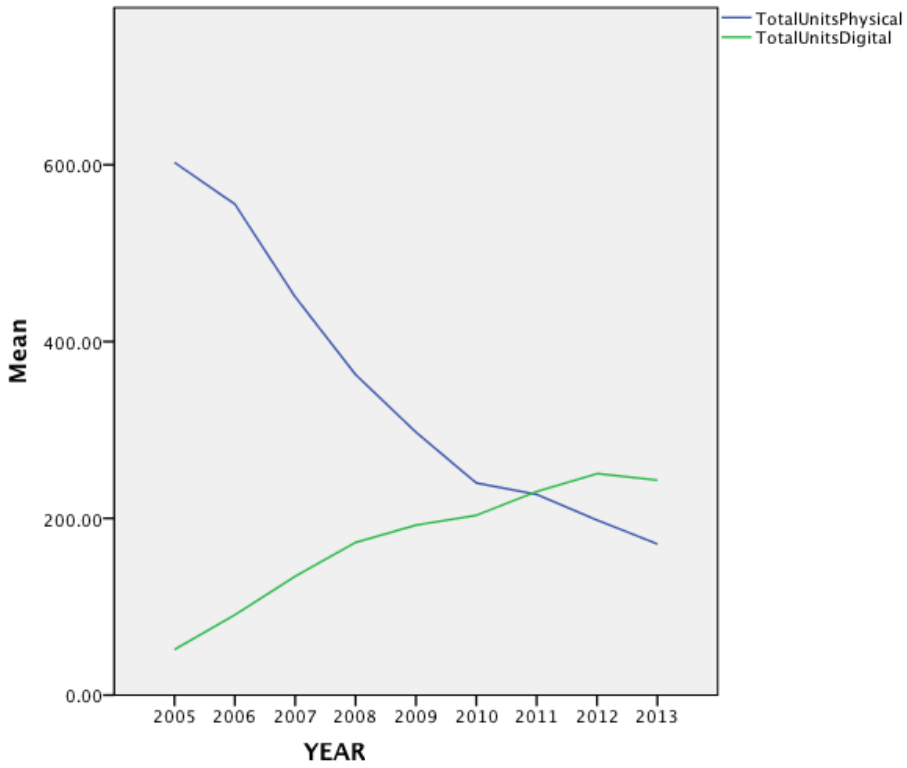
In absolute terms, the market for current physical albums has decreased from 380 million units in 2005 to only 89 million in 2013, although, over the past few years with a diminishing rate of decline. On the other hand, the market for current digital albums has increased from 10 to 62 million units in the same period (Graph 1). This time, with a steady growth rate.

Graph 1. Physical & Digital Albums, current & catalogue, unit sales in millions per year.



On the whole, the tipping point between a decreasing physical and an increasing digital market came in 2011, when digital took over, both in terms of units sold as in terms of total value (Graph 2). It is important to note that, in order to compare a physical market of mainly albums to a digital market with mainly individual tracks sold, Nielsen applies the so called track equivalent album ratio (TEA). This ratio implies that, when comparing markets, 10 tracks are equivalent to one album. Returning to the raw data, providing some context, the RIAA reports that the total value of the music market has dropped from almost 12 billion USD in 2003, to just 7 in 2013.

Graph 2. Physical & digital albums including TEA for digital tracks, current & catalogue music combined.



(Graph 2. Millions of albums per year)

Table 1. Percentage change per year for each format & category, including RIAA total physical & digital value.

Year	Physical - Current	Physical - Catalogue	Physical - Deep Catalogue	Digital Album - Current	Digital Album - Catalogue	Digital Album - Deep Catalogue	Digital Track - Current	Digital Track - Catalogue	Total Digital Tracks	RIAA - Physical Value	RIAA - Digital Value
2004										2.53	
2005										-7.90	475.35
2006	-9.08	-5.66	-2.82	93.75	108.96	104.17			64.98	-11.85	72.70
2007	-19.11	-18.55	-17.32	45.70	63.57	63.27			45.08	-19.08	40.95
2008	-22.91	-13.96	-13.45	26.57	37.55	41.88			26.75	-27.79	12.93
2009	-20.67	-14.05	-9.70	13.99	18.41	21.15			8.32	-20.20	.60
2010	-16.28	-23.38	-21.90	13.30	12.33	13.45	3.01	-5.84	1.12	-20.38	4.41
2011	-11.89	4.12	8.14	19.64	19.81	23.08	5.62	10.78	8.45	-7.72	12.47
2012	-19.84	-3.96	-3.70	13.21	13.55	17.19	9.16	2.03	5.11	-16.53	13.98
2013	-11.88	-15.46		3.83	-3.51		-1.49	-9.14	-5.76	-13.37	7.62

(Table 1. Percentage change calculated by dividing the change per year by the value of the previous year)

We know that the last decade displayed decline in the physical market and growth in the digital market, but how much exactly? What percentage change belongs to these variables? In order to compare them, the percentage change of each category and format was computed (Table 1). Firstly, looking at albums, the average decline in current physical albums is much greater than the decline of catalogue physical albums (-16% and -11% respectively). Turning to digital albums, the average percentage increase is much smaller for current than for catalogue albums (29% and 34% respectively). Secondly**,** the data includes deep catalogue sales data as a subset of catalogue. Comparing the mean percentage change in deep catalogue between physical and digital albums, we see that this category shows the least decline (-8.6%) for physical and the highest growth (40.6%) for digital. Thirdly, digital tracks show a slow but steady increase in consumption of current music but an average decrease of consumption of catalogue music. Note that these results are only reported over the past five years, which makes the outcomes less reliable than the other variables. Nevertheless, the remarkable observation here is that current digital tracks show an average yearly increase of 21.58 million units while catalogue digital tracks show an average yearly decline of 5.68 million units, which translates into 4.07%

and -0.54% respectively. However, in terms of absolute volume, the market for catalogue music in digital tracks is bigger than the market for current music, so even though there is an average percentage decline, digital tracks still had a higher sales volume in catalogue music.

When interpreting the first analysis, there has to be a clear distinction between absolute sales volume and trends. In other words, a big market in fast decline could soon lose to a small market in steady growth. Summarising the interpretation of the percentage change, the decline in the physical market is mainly due to the decline of current music whereas the growth of the digital albums market is mainly due to catalogue sales. Overall, it is deep catalogue that is both least affected in a declining market and most increased in a growing market.

Table 2. Percentage market share current versus catalogue for all formats.

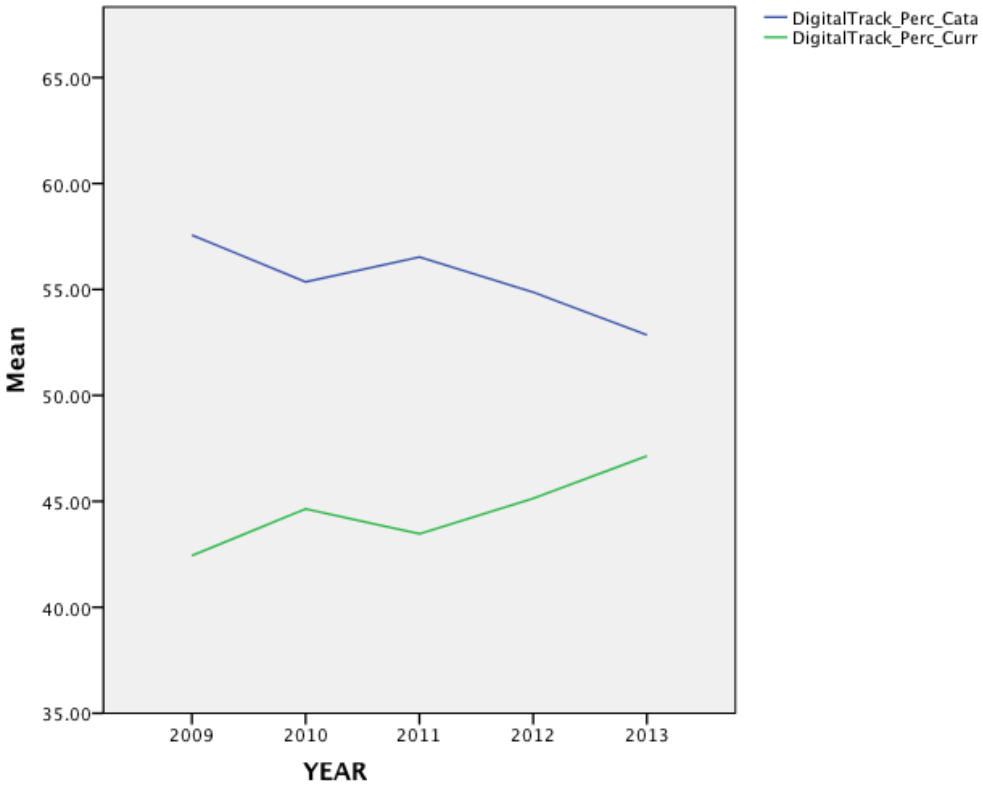
Year	Physical - Current	Physical - Catalogue	Physical - DEEP Cat. a.p.o. Cat.	Digital Album- Current	Digital Album - Catalogue	Digital Album - DEEP Cat. a.p.o. Cat.	Digital Track - Current	Digital Track - Catalogue
2005	63.03	36.97	68.54	58.90	41.10	71.64		
2006	62.16	37.84	70.60	57.06	42.94	70.00		
2007	62.00	38.00	71.67	54.20	45.80	69.87		
2008	59.38	40.62	72.10	52.13	47.87	72.06		
2009	57.43	42.57	75.75	51.18	48.82	73.73	42.44	57.56
2010	59.58	40.42	77.22	51.39	48.61	74.46	44.64	55.36
2011	55.51	44.49	80.20	51.36	48.64	76.49	43.47	56.53
2012	51.01	48.99	80.41	51.28	48.72	78.95	45.13	54.87
2013	52.05	47.95		53.11	46.89		47.14	52.86

(Table 2: a.p.o. stands for: “as part of catalogue”, which is the result of deep catalogue (> 36 months in release) divided by catalogue (>18 months in release))

As the main subject of this thesis is the dynamics between current and catalogue music, the data on both categories was transformed to create new variables that display the market share of current versus catalogue per format. Naturally, adding up the two

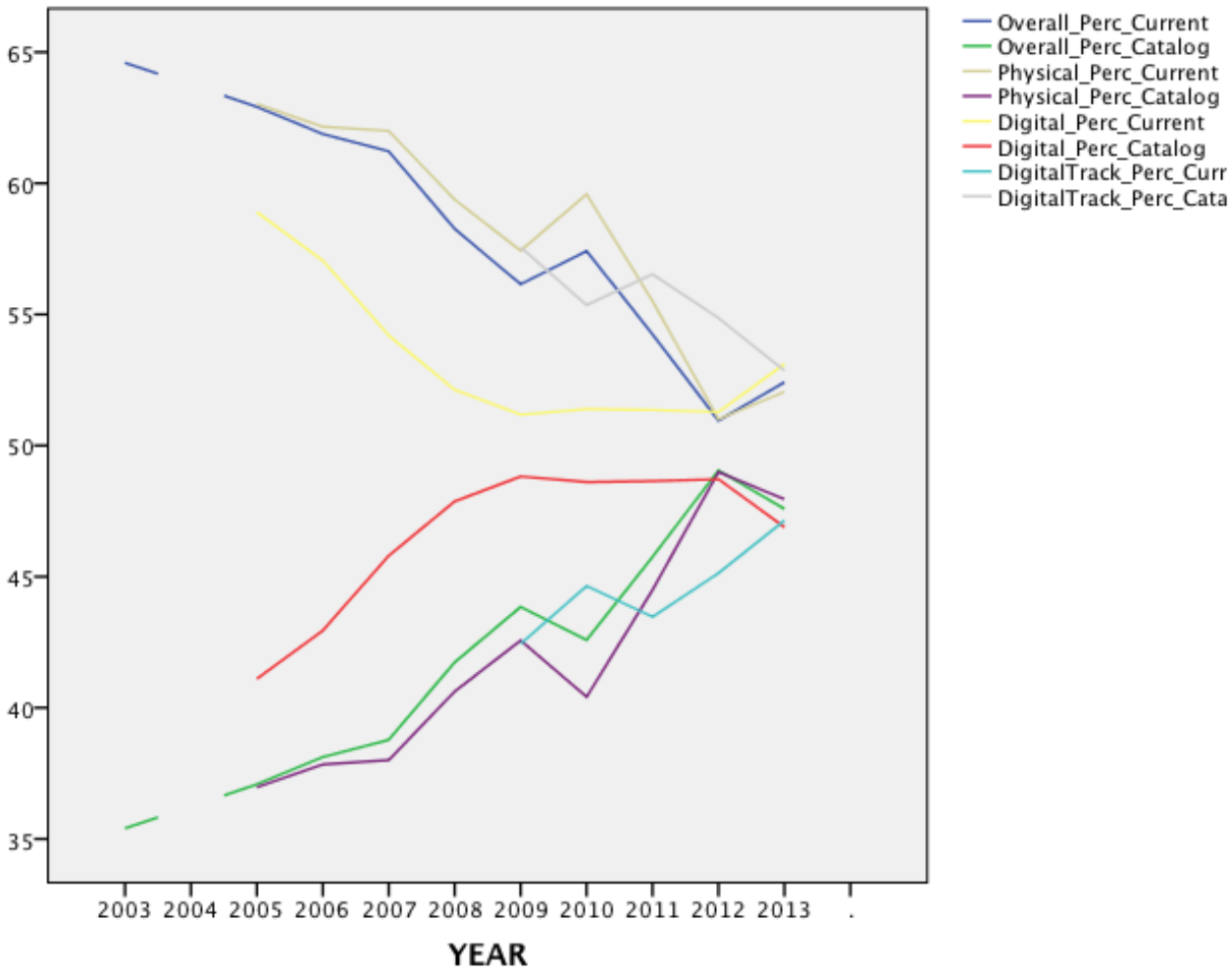
categories will always total 100%. Later on, the relative market share of deep catalogue as a part of catalogue will also be discussed. Regarding physical albums, current music has gone from 63% in 2005 to 52% in 2013 as can be seen in table 2. Therefore, catalogue physical albums have gone from 37% to 48%. For digital albums the market share of current albums went from 58% to 53% for that same period.

Graph 3. Percentage market share of current and catalogue for Digital Tracks.



A remarkable observation is that digital tracks show an opposite relation between current and catalogue. Namely, catalogue has always had a bigger market share than current music for digital tracks (e.g., 57.5% in 2009)(Graph 3). However, just as the other formats, the market shares are converging towards a 50/50% equilibrium (Graph 4). Overall, not only has the market share of catalogue music increased for all but one format, the market share of deep catalogue, as a subset of catalogue has increased for every format, accounting for up to 80% of the catalogue category in 2013. This observation implies a shift in legitimate consumption of music over the past ten years, not only towards music older than 18 months in release, but more specifically, to music older than 36 months in release.

Graph 4. Percentage market share of current and catalogue music for all formats.



3.5 Statistical Analysis

Although a maximum of ten data points per variable is not sufficient for conventional time-series analysis, it is possible to get significant results for a selection of statistical tests. In this section only relevant results with a significance level of 99% (*p* value of $p \leq .01$) will be reported. As is customary in time series analysis, even significant trends have to correspond with relevant theory. First of all, it is important to provide evidence for the claim that the physical market is stabilising over time. A combination of theory and statistics can serve that purpose. The model fit for a regression analysis of all categories of physical album sales in the U.S. over a time span of nine years since 2005 demonstrates a higher R squared and F value for an exponential model than for a linear model (Table 3)**.** Analysing residuals for the exponential model there is no discernible pattern, rather a random scatter. The residuals of the linear model show a very clear pattern which corresponds with an exponential model. Therefore the model choice is justified.

Table 3 - model summary

- dependent variable: Physical Albums Current
- independent variable: Year

	R Square	F	Sig.
Linear	.944	117.712	.000
Exponential	.992	744.857	.000

Although non-linear models such as the exponential model are bound to have a high 'model-fit' as they are more complex, we can prove its importance by explaining why the linear model does not apply. Most importantly, the linear model predicts negative sales figures in the near future, which is impossible. Moreover, the observed diminishing rate of decline is consistent with the theory that after most consumers have made the transition to downloads and streams, a small but loyal target group remains that will continue buying physical albums, both on CD's and vinyl records, both online and offline. Concluding, with a limited amount of data, regression models will only provide valid predictions for a short time-frame. However, that time frame is long enough to establish that the U.S. market for physical albums is currently stabilising in terms of units sold (Friedlander, 2014; Nielsen, 2014).

The observed trend of an increased market share for digital catalogue albums is one of the essential observations of this thesis. As the analysis will show, it also stands out in terms of predictors. In the observations paragraph, graphically we observed an upward

trend for digital catalogue albums. However, if we incorporate other predicting variables into the model, it is no longer significant over time (p= .916). Searching for the strongest predictor, we find that not time but broadband penetration is the most significant independent variable for this model. Especially when we involve time, gross national income and household broadband penetration we find that the latter variable is the strongest predictor of the market share for digital catalogue albums (Table 4). The 'Beta' value represents the standardised coefficients for each of the predictors in order to compare their influence.

Table 4 - Predictors

– Predictors for market share of Digital Catalogue Albums

Model	Beta	Sig.
Broadband Penetration	1.443	.000
GNI per capita U.S.	-.529	.002
(Time) - Year	-.113	.916

Therefore, as household broadband penetration is practically synonymous to digitisation, we can deduce that not income or time but digitisation is the strongest predictive factor for the increased market share of digital catalogue albums. Moreover, the same variables were tested for cross-correlations, which is a more suitable test for time series data because the errors in time-series data are by definition related, which is taken into account in this type of analysis. In contrast, normal regression analysis assumes independence of errors, which could corrupt the results for time-series analysis. The strongest cross correlation for all the variables in this paragraph is between broadband penetration and the market share for catalogue digital albums. More specifically, this strong cross-correlation (r = .965) is at a lag of -1, which implies a lagged positive effect from digitisation on the market share of digital catalogue albums. The lag of one year likely represents the time it takes consumers to grow accustomed to broadband technology as well as the time it takes the effect to show up in sales data.

Despite the fact that broadband penetration is highly important for the market share of digital catalogue albums, there is a more broadly relevant predictor to be found in the computed data on market share between U.S. current and catalogue music. For both physical and digital deep catalogue albums, time is the strongest predictor. Apart from, time being a relevant predictor, the outcomes of the regression analysis, including GNI and household broadband penetration in the model, demonstrate a statistically significant trend

towards increased market share for deep catalogue music over time (Table 5). Since the model incorporates multiple predictors, a lower significance level can be accepted (alpha = 95%, $p \leq .05$). Unfortunately, the data does not permit a similar analysis of predictors for digital tracks. Also, as will be noted in the limitations chapter, the analysis has to be interpreted as an indication that can only be accepted if consistent with theory.

Table 5 - Predictors

- Predictors for physical & digital deep catalogue albums

Model	**Physical** Beta	Sig.	**Digital** Beta	Sig.
Broadband	-.624	.072	.016	.873
GNI per capita	.470	.060	.039	.584
(Time) - Year	-.781	.043	.948	.001

4. Results

Getting straight to the point, the hypothesis can be accepted, although with two alterations. There is indeed a significant trend towards a larger market share for catalogue music, however, more specifically, the trend is significant over time for deep catalogue, an older subset within catalogue. Secondly, due to data limitations, this trend applies only to the past nine years in music sales. Summarising, based on the past nine years of unit sales in the U.S. music market for both physical and digital albums, there is a significant trend over time towards a larger market share for music longer than 36 months in release.

The broader context is essential to a good understanding of the results. Consequently, the main hypothesis has to be interpreted in relation to the other observations and results. For example, the physical market shows the biggest absolute decline in current titles while digital albums show the biggest increase in catalogue albums. The most stable category in both the physical and digital album market is deep catalogue which shows the least percentage decline in the physical market and the highest percentage growth in the digital market. Turning to market share analysis, although there is an evident shifting trend towards an equal balance between current and catalogue music for all formats, most formats have shown a bigger market share for current music in the past ten years, except for digital tracks. Although also converging, the latter format has displayed a bigger market share for catalogue music ever since Nielsen started reporting on it. However, as stated, this format is also converging towards a more equal balance.

The statistical tests served as a conclusion to the data analysis chapter, and they will serve the same purpose in this chapter of results. In spite of the small data-set with a too limited number of data points for accurate time-series analysis, a number of significant results could be computed. Firstly, combining curve-fitting and theory, the stabilising trend of diminishing decline for current physical albums was established. Secondly, the increased market share for digital catalogue albums is most strongly related to digitisation, or, household broadband adoption, not to time. Finally, as mentioned before, the trend of increasing market share for deep catalogue in both the physical and the digital album market is indeed significant over time, which validates the main hypothesis.

5. Implications

For every format, the market shares of current and catalogue music are converging, with a strong trend towards an increasing market share for deep catalogue. This implies that catalogue music could become the largest revenue driver in just a few years. Such a prospect could have major implications for record label strategy. For example, promotional budgets would have to be allocated differently if this trend is indeed showing the consumers' true preference. What if we are only now entering the era of true music consumption after a long transition period of file-sharing, technology adoption, and business model innovation? As reported, the U.S. music industry has been stable in terms of revenue for the past four years. Consequently, maybe the industry is past its biggest dip. Following this line of thought, the increased attention for existing copyrighted material would positively affect the major labels, as they control the majority of popular catalogue. The highly concentrated oligopoly of the major labels is clearly related to the control over this category of music. Namely, as copyright's term and scope was extended over the years, so did the means of music consumption through digitisation, enabling consumers to access older music. As a result, the analysis is consistent with the expectation that major record labels will retain their market power based on existing copyright for many years to come.

Because the three major labels have market power and control over media channels in the U.S., one critical effect would be the inevitable decrease in conventional promotion for current music. Since promotional budgets are limited and therefore allocated based on effectiveness, record labels will have to make a trade-off decision what music to promote. As old hits are already known to the general public, they require less promotional investment as initial promotion was done years ago and can be regarded as sunk costs. In other words, because promotion of old songs is more cost effective, investment decisions will shift towards catalogue. Consequently, the increased attention for the deep catalogue category could have a negative effect on the promotion of new works. Nevertheless, if the recent acceleration of music streaming subscription and slight downturn in downloaded track consumption proves to be a significant trend over time, streaming could raise industry revenue far beyond the point of having to make a trade of between new or old music promotion. Unfortunately, there is not enough data available to incorporate that development in this thesis. For example, only since 2013 digital track sales have shown a decline, which is not enough evidence to speak of a trend in academic terms.

Referring to the discussion of the long tail theory in the theoretical framework, there are equally important implications. The observed trends demonstrate that the age, or time in release of titles should be part of analysing the long tail theory. Currently, in literature, the greater part of such analysis focusses on sales distribution in terms of top ten market share or percentage of titles versus percentage of sales. Although relevant, the current discourse distinguishes exclusively between ‘hits’ and ‘niche’ content without incorporating time. Hits being the popular, big selling titles and niche being less popular titles with relatively small sales figures in terms of units. Therefore, the outcomes of this thesis propose a need for a change of discourse. The increased attention for deep catalogue does not relate to popularity of titles, it shows that, in an online environment, popular old songs have a longer life span as revenue drivers. The long tail theory attempts to explain shifts in consumption because of the shift towards online consumption. However, literature is indecisive on whether increased online consumption provably constitutes a trend towards increased consumption of niche content (Elberse, 2008). Especially now that business model developments such as subscription services have made a virtually unlimited library of titles accessible to consumers, the time in release of titles seems just as relevant for contemporary analysis as their relative popularity (Geiger, 2014). As a consequence, the discourse of long tail discussion should include time in release and distinguish between new hits and old hits.

5.1 Limitations

One of the main limitations of this thesis is that it attempts to do a time-series analysis with only one-fifth of the data points per variable commonly required for such an analysis. Because of this, only descriptive information and very strong results could be reported and many tests, however relevant, had to be left out. The reason for this is the poor availability of data. Firstly, there are no common reporting standards. Which means that one representative body may be reporting unit sales while the other is reporting revenue. Also, definitions of categories and formats such as catalogue or digital tracks differ between publishers. The same applies to the comparison of data between countries. Secondly, poor data availability is related to the business that surrounds it. Because competition is fierce, detailed music industry reports from companies such as Nielsen or the IFPI contribute to the competitive advantage, and are therefore expensive.

The lack of accessible data on music consumption through streaming services has been another unfortunate limitation. Although many industry executives indicate that subscription streaming will be the next main format, there is no detailed data to back up that claim. For example, Nielsen has only reported on the number of yearly streams since its 2013 year-end report. Moreover, the RIAA only reports on the proportion of total music industry revenue from streaming, which is 21% for 2013 (Friedlander, 2014). Free of charge, there is no data available on the distribution of music streaming consumption.

Even if the data set would have been more extensive, the implications would still have to be interpreted alongside current day developments. In such a volatile industry, even the best research on trends would only have temporary relevance. The main added value of this thesis therefore lies in its theoretical framework and broader context that strengthen the data analyses and explain the current day implications of trends.

6. Conclusion

Over the past ten years, the U.S. recording industry has shown considerable change. Not only did digital formats take over both in terms of unit sales and revenue in 2011, streaming also made its entrance, generating 21% of industry revenue in 2013. Some changes such as decline in the physical market and growth in the digital online market are generally accepted. However, a greater level of detail is needed to understand U.S. music sales correctly. Based on year-end unit sales data from Nielsen Soundscan, a commonly overlooked distinction in music industry research was investigated. Namely the distinction between current and catalogue, respectively music less and more than 18 months in release.

In the data analysis, firstly the absolute trends were established. The physical market does show a decline although at a diminishing rate, which points to a stabilising trend. Growth in digital sales has been up for years although 2013 shows a slight decrease in digital track sales. The most accepted explanation for the latter effect is the recent and rapid acceleration of streaming services' popularity. However, just one deviant data point does not constitute a trend in academic terms. Secondly, the distribution of music sales between old and new music in the U.S. over the past ten years revealed that there is a significant trend over time towards an increasing market share for deep catalogue i.e. music more than 36 months in release, for both physical and digital albums. This observation is consistent with the theory that shelf space restrictions of the physical brick and mortar store did not reflect the U.S. consumer's true preference. Namely, now that shelf space restrictions are lifted and online inventory is virtually unlimited, unit sales demonstrate an increased market share for deep catalogue music. In other words, the more music is available, the more old music will be consumed.

Although the importance of the album format is in decline, the trend in increased market share for deep catalogue is significant. Moreover, in digital track sales, catalogue has had the bigger part of market share since sales were reported. Furthermore, recent articles and quotes from industry incumbents indicate that catalogue music plays an even bigger role in the streaming market, which is currently expanding. Therefore, combining the research and theory from this thesis, it cannot be ignored that the further online consumption of music evolves, the more important catalogue music becomes as a revenue driver. Which has a number of important implications for today's music industry. Firstly, because of copyright's term and scope, rights holders of popular catalogue will be positively affected by the current trend. More specifically, as major record labels control

most popular catalogue, the discovered trend implies a prolongation of the market concentration of U.S. record labels. Secondly, if this trend continues, investment decisions could shift towards existing titles, posing a threat to the promotion and dissemination of new music through established media. Finally, in contemporary music industry research, there is insufficient attention for the distinction between new and old music. Theory on consumption patterns influenced by digitisation tends to focus on the difference between popular and less popular titles while the time in release of content is generally ignored.

The discoveries made in this thesis call for a change of discourse in music industry research. Application of theories such as the long tail theory should at least include the perspective of time. Put in practice, we can conclude by clarifying the title of this thesis. As online consumption of music evolves, there is significant increased attention for older music. In contrast, evidence for increased attention for niche i.e. previously less popular content, is inconclusive. Therefore, future research should focus less on competition between hit and niche content and more on how new and old hits are competing. Therefore the U.S. music industry is currently most adequately illustrated by the title of this thesis. Old and new titles are increasingly competing and, as a consequence, the long tail of music does not consist of niche content but mainly of old hits.

6.1 Recommendations

The main recommendation resulting from the aforementioned is to invest in reporting standards and data transparency in the recording industry. Data should incorporate the format and the age of music consumed. Ultimately, the recording industry should share detailed and standardised data on the distribution of music consumption through streaming services. The industry could benefit greatly from academic research on this complicated subject because recent developments imply that the streaming format will continue to grow. Namely, on the 28 May 2014, Apple (iTunes) confirmed its intention to make its biggest acquisition to date buying a music subscription streaming platform. Of particular interest is what role mobile subscriptions and apps will play in the future of music consumption. Therefore, future research would have to include detailed data on streaming services. A format generating more than one-fifth of industry revenue can no longer be ignored in recording industry analysis.

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