

Digital disruption in the creative industries: the case of the American comic book market

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Abstract

Digital disruption toppled or transformed most of the incumbent business models in the creative industries. The American comic book market faced the same processes driven by digitalisation that disrupted music and audio-visual industries. Yet, the traditional distribution channels and print formats of the comic book market continued to grow even when new digital formats and intermediaries emerged. This thesis analyses and describes the processes that allowed for this unique development. It first describes digitalisation and the ways it led to disruption of incumbent business models. Afterwards, the thesis provides an overview of how creative industries changed in the XXI century in the presence of digital intermediaries and online piracy. The issue of piracy is then elaborated upon with a rigorous literature review of the available empirical evidence. Finally, the American comic book market and its recent changes is for the first time described in a comprehensive and thorough manner. To achieve this task, data is collected from numerous sources and collated to achieve new conclusions and insight. New panel survey data is presented and used to provide empirical validation of several of the concepts related to digitalisation in the comic book industry, such as the willingness to pay for digital formats and the impact of comic book piracy. The results of the thesis highlight several key points. The American comic book market did evidence the processes that triggered disruption in other creative industries. However, simultaneously, the market was affected by three large developments. First, the comic book audience expanded to numerous diverse and casual readers, with the expansion largely driven by popularisation from comics-based media (cinema blockbusters) and an easier access to diverse stories brought by online retailers. Second, the digital formats have so far been considered as inferior by the incumbent audience – mainly due to their lack of collecting value combined with high prices. As such, the print reading audience is more likely to turn to the free piracy than to the officially released digital formats. Third, the comic book publishers shifted their strategies to cater more to the new readers as well as to collectors who place additional value in the variant comics covers. These three changes allowed the American comic book market to prosper even in terms of print sales and the number of comic book stores. Yet, the current actions of the digital intermediaries, the unsustainability of the comic book publishers' strategies and the theory of disruptive innovation suggest that the disruption might have been delayed rather than avoided. Likely, the comic book issue market will soon reverse its growth trend and decrease to a base level defined by the stable popularity of some of the top comic book storylines. These results provide insight into the interaction between piracy, digital formats and traditional distribution as well as contribute to the existing knowledge on the workings of the American comic book market.

Streszczenie

Cyfrowa rewolucja wyparła lub przekształciła dotychczasowe modele biznesowe w sektorze kreatywnym. Te same procesy, które zburzyły równowagę na rynkach muzycznym i audiowizualnym, zaszły także na rynku komiksu amerykańskiego. Mimo tego, tradycyjne kanały dystrybucji oraz formaty drukowane na tym rynku kontynuowały swój wzrost nawet gdy pojawiły się formaty cyfrowe i internetowi pośrednicy. Ta praca analizuje i opisuje procesy, które pozwoliły na ten jak dotąd niezaobserwowany rozwój. W pierwszym kroku praca opisuje procesy cyfryzacji i sposoby w które doprowadziły do zaburzenia dotychczasowych modeli biznesowych. Następnie, praca omawia zmiany, które zaszły w sektorze kreatywnym w XXI wieku w obliczu cyfrowych pośredników oraz piractwa internetowego. Zjawisko piractwa jest rozpatrzone dogłębnie w rygorystycznym przeglądzie literatury empirycznej. Wreszcie, rynek komiksu amerykańskiego oraz zmiany które na nim zaszły jest po raz pierwszy omówiony w sposób wyczerpujący i dogłębny. By to osiągnąć, dane z wielu źródeł zostają zebrane i połączone w celu wyciągnięcia nowych wniosków i wiedzy. Zostaje zaprezentowane nowe badanie panelowe, a jego wyniki wykorzystane do empirycznej weryfikacji koncepcji związanych z cyfryzacją na rynku komiksu (m.in. skłonność do zapłaty za formaty cyfrowe oraz wpływ piractwa internetowego na sprzedaż). Wyniki pracy dostarczają kilku wniosków. Rynek komiksu amerykańskiego przeszedł zmiany, które w większości sektora kreatywnego zaburzyły poprzednie modeli biznesowych. Jednocześnie jednak, rynek komiksu przeszedł trzy unikalne dla niego i znaczące zmiany. Po pierwsze, grupa czytelników komiksów rozszerzyła się obejmując bardziej zróżnicowanych czytelników, oraz tych czytających dorywczo. Zmiana ta była głównie kierowana popularyzacją ze strony mediów opartych na komiksach (np. hitów kinowych) oraz łatwiejszym dostępem do bardziej zróżnicowanych historii umożliwionym przez sklepy internetowe. Po drugie, cyfrowe formaty są w znacznym stopniu uważane za podrzędne przez dotychczasowych czytelników komiksów. Wynika to głównie z braku wartości kolekcjonerskiej cyfrowych formatów oraz ich zbyt wysokich cen. W rezultacie, czytelnicy komiksów papierowych częściej sięgają po darmowe kopie pirackie niż po oficjalnie wydane egzemplarze cyfrowe. Po trzecie, wydawcy komiksów przekształcili swoje strategie wydawnicze by dopasować tytuły do nowych grup czytelników oraz kolekcjonerów przykładających wagę do unikalnych wariantów okładowych. Te trzy zmiany na rynku pozwoliły komiksowi amerykańskiemu rosnąć nawet pod względem sprzedaży papierowej oraz liczby sklepów z komiksami. Z drugiej strony, obecne działania pośredników cyfrowych, brak możliwości utrzymania nowych strategii wydawniczych oraz teoria przełomowej innowacji sugerują, że negatywne skutki cyfryzacji mogły zostać opóźnione – nie zaś uniknięte. Z dużym prawdopodobieństwem, rynek zeszytów komiksowych wkrótce przestanie rosnąć i zamiast tego spadnie do niższego, trwałego poziomu sprzedaży napędzanego stabilną popularnością najbardziej znanych postaci komiksowych. Wyniki te dostarczają nowej wiedzy o interakcji pomiędzy piractwem, cyfrowymi formatami i tradycyjnymi kanałami sprzedaży, dostarczają wniosków dla innych rynków kreatywnych oraz uzupełniają wiedzę o rozwoju rynku komiksu amerykańskiego.

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Introduction

Digitalisation, and the new economics it entailed, has disrupted most of the incumbent businesses, leaving little to no time to adjust to the dynamic changes it entailed (McAfee and Brynjolfsson, 2017). It created new markets, often on the remains of older and no longer relevant ones. It has destroyed jobs, changed how most remaining were performed and created new ones. Together with the advancement in hardware and internet connection, it has reshaped how societies act and interact with each other. It also pushed culture into an era of abundance, lifting the barriers to consumption and creation. It created new types of art and changed way it is distributed and accessed.

Creative industries have been exceptionally vulnerable to the digital disruption. As major labels and publishers resisted transforming their businesses, digital piracy emerged and rapidly toppled the existing balance (Smith and Telang, 2016a). For the incumbent businesses, this constituted an unprecedented and unique challenge. With internet proliferation, piracy provided numerous advantages over the prior models of distribution. The new competitor in the form of unauthorised sources offered a huge selection of unbundled products, with no fees, no costs of production or distribution and instant access from everywhere and at every time.

The creative industries were thus forced to transform their businesses. The competition from piracy pushed the industries to entirely digital formats, making them change their primary unit of production and relinquish much of their power to digital intermediaries. The growing online retail lifted many of the barriers on access and variety of content. The increased access to production technologies, promotion and distribution channels crippled the position of the major publishers by reducing transaction costs and instead paved the way for small labels and independent creators. The mobile devices have created new markets and sparked competition for consumers' attention. Jointly, these processes contributed to a surge in demand for creative content, but also introduced new difficulties in its monetisation and control.

The American comic book market seems to have witnessed the same processes as the other creative industries but showed no signs of disruption. The comic book market saw the rise of new distribution channels, product formats, competition from independents and displacement from piracy. Yet, the traditional brick and mortar stores grew in number, print paper formats have grown in sales faster than the digital ones, and the major publishers retained their market shares. This unique pattern of changes remains a puzzle that the current literature on digital disruption does not solve.

The comic book market also remains an unstudied territory, despite its recent penetration into mass culture. Superheroes and comic book characters have become an integral part of most media. Film adaptations of comic books released in 2018 have accumulated more than \$2.5 billion in box office revenues in the US alone – and more than \$7 billion worldwide. Currently, of the top 10 highest grossing movies of all time, 5 were based on comic books.¹ Still, the blockbuster movies of the last decade form only the tip of an iceberg that has grown from comic books. Superheroes of the American comic books have populated video games, toys and merchandise, kid shows, live-action series on all major networks, books and have become a central theme of huge fandom events that bring up to two hundred thousand fans over few days. Many huge franchises not originating from comics have since made way to the comic book format as well (e.g. Star Trek and Star Wars).

¹ As of May 2019.

The aim of this thesis is thus to disentangle the specific processes that made the American comic book market unique. While the American comic book market itself might be considered niche, it has driven the current trends in other creative industries such as cinemas or TV. Moreover, understanding the processes that mitigated the disruptive nature of digitalisation for the comics market can provide valuable insight for other industries and businesses facing digital disruption.

Therefore, this thesis answers three key research questions:

RQ1: Which of the digitalisation-driven processes that disrupted other creative industries were faced by the American comic book industry?

RQ2: What other processes affected the performance of the American comic book market and how do they relate to digitalisation?

RQ3: Was digital disruption in the American comic book market avoided or rather delayed?

Chapter I provides an overview of the characteristics of a digital disruption. To this end it describes the technological, strategic and economic processes that reshaped most of the incumbent businesses, as well as the ways in which content is created and consumed. To achieve this, Chapter I relies on the established characteristics of digital disruption described in economic literature. Chapter I comprises the background and context crucial to the answering of **RQ1** and **RQ3**. To understand whether the comic book market indeed faced the same challenges as other creative industries, it is imperative to first learn the economic processes that digitalisation entails.

Chapter II provides an in-depth look at how piracy and digital intermediaries reshaped the legal distribution since the beginning of the XXI century – also in the light of processes described in Chapter I. While Chapter I describes the processes in general, Chapter II focuses on how traditional creative industries changed over the course of the last 20 years. One of the most important aspects of digitalisation for creative industries was the emergence of internet piracy. Chapter II describes the shifts in power and the role that piracy played in disrupting the incumbent players of the industries. It thus provides further context for the answer to **RQ1**, in particular by bringing the focus to cultural content and highlighting the role of pirate providers.

Chapter III provides a thorough review of empirical literature on the effects of piracy on legal distribution and on switching between legal and illegal channels. While Chapter II focuses on the historical changes and their economic interpretation, Chapter III provides evidence on the actual scale of the impact of illegal distribution channels. Together with Chapters I and II, Chapter III provides context for the answer to the **RQ1**. It shows how piracy affected other creative industries, providing a point of reference for the analysis of piracy in the context of comic books.

Chapter IV focuses on the American comic book market and how it evolved in the XXI century. All of the processes and changes discussed for other creative industries are showed in the context of the comic book market, with the support of collected data and an empirical study. Thus, Chapter IV constitutes the core research of this thesis. It provides the second side of the comparison necessary for the answer to **RQ1** and describes the processes unique to the comic book industry, constituting the answer to **RQ2** and the starting point for the answer to **RQ3**.

Finally, Chapter V provides a discussion collating the content of Chapters I-IV to provide answers to the three Research Questions. To answer whether the same processes took place for the American comic book market as for other creative industries (**RQ1**), Chapter V discusses the developments brought by digitalisation (based on Chapters I and IV), the shifts in the market that occurred in the XXI century (based on Chapters II and IV) and the effects of piracy on legal consumption (based on Chapters III and IV). Moreover, Chapter V discusses the developments that were unique to the comic book market (described in Chapter IV). This allows to answer **RQ2** and to highlight how these developments allowed the comic book market to avoid the typical fate of digital disruption. Finally, basing on the theory of disruptive innovation, and the processes and evidence described in Chapters I-IV, Chapter V provides an answer to the third question (**RQ3**) on whether the digital disruption is still likely to occur. Chapter V finishes with conclusions and implications for further studies.

Data and methods

Despite the unique resilience to what is commonly known as ‘digital disruption’, the American comic book market received little to no scrutiny from empirical research. Much of the data on the industry is accessible only through scattered reports or from distributors themselves. However, so far it has been mostly analysed only by the industry insiders with little context of the underlying economic processes. Still, other data remains scattered across numerous sources and has not been so far collated for any thorough analysis. Finally, there is scarce data on the piracy behaviour of comic book readers and the scale of the problem for the industry as a whole. Taking all this together, it remains unknown how the American comic book market avoided the fate of other creative industries.

The steps taken to collect data allowing to answer the research questions of this thesis and to fill in the blanks in the available knowledge can be categorised in the following manner:

1) Collection of existing industry statistics

As a first step, existing statistics on the comic book market have been gathered and analysed from numerous sources. Much of the information on the comic book market and its participants is scattered across different sources, with most of them not representative of the market as a whole. As such, special consideration was given to include many complementary sources that could reinforce each other by providing data on different parts of the market. The sources of these data include existing surveys (both online and offline), interviews, conference proceedings, few research studies and reports involving comic book store owners, publishers, digital distributors, comics enthusiasts, industry insiders, fan convention organisers, readers, fans, and others.

2) Automated data collection for derivation of new statistics

Much of the data on the comic book market is available through various online reports (e.g. on sales of comic book issues) or comic book databases (e.g. on comic book releases since the 1930s). However, despite their informative nature, many of these data are not available in the form of a database. As such, automated tools have been scripted to collect these data and construct new large datasets on the basis of the information available online. The sources of these data include among others: distributor reports, comic book databases with information on single issues, fandom wikis (form of an electronic encyclopaedia) devoted to comic book universes. The new large databases provide means of tracking changes to the comic book publisher strategies for long periods of time. They thus provide crucial information on how these strategies changed in the era of digitalisation.

3) Own panel survey

Despite a thorough investigation of existing sources, many important questions could not be answered without direct data collection. This thesis provides a first panel survey of comic book readers, described in detail in Chapter IV. The survey studied consumer choices of different channels and formats, as well as the interest of comic book readers in other forms of media. The panel data also allows to conduct new econometric analysis of the effects of piracy on comic book purchases.

4) Other sources of data

To highlight several of the points made in this thesis, some sections also rely on available micro-level survey data on online participants (notably, the HIIT survey, described further in Chapter III).

Methodology

To answer the research questions of this thesis, I rely on several methodological approaches. The framework of this thesis in terms of the discussed economic concepts relies on established literature and theories of digitalisation, disruptive innovation and their relationship with creative industries. These concepts form the majority of the body of Chapters I and II.

For areas where no consensus has been reached among scholars, or where the findings have not been yet discussed jointly, this thesis provides rigorous and comprehensive reviews of existing empirical literature. Where relevant, it also provides typologies for the factors identified in the scattered literature (on the switching costs of piracy) and uses econometric and statistical tools to fill in the blanks on several of the discussed factors. These solutions form the majority of Chapter III.

The data collected from various sources is explored to uncover patterns and trends in the comic book industry. Moreover, the panel survey data is used for econometric analyses of the effects of piracy in the comic book market and for the analyses of switching between comic book formats. Additionally, the panel survey data is used to analyse consumption choices of comic book readers and to simulate potential outcomes of price changes in the market. These analyses form the majority of Chapter IV.

Findings

Many creative industries are still at the beginning of digital transformation. Others undergo fundamental changes as new entrants arrive to the market. The case of the comic book market is especially interesting as it presents unique resilience to the disruptive effects of digitalisation. As such, studying the American comic book market can yield important insight into the mechanisms allowing to cope with digital competitors. Still, despite its global influence, the American comic book industry received little to no academic scrutiny. This thesis provides a first thorough discussion of the American comic book market, its recent changes, the ways it was affected by digitalisation and unauthorised distribution as well as the ways it managed to delay digital disruption.

The American comic book market has faced the same challenges as other creative industries. The typically physical products have gained high-quality digital counterparts. Digital intermediaries entered the market, as did online retail. These outcomes, in turn, contributed to growing sales of lesser known creators and independent publishers. Meanwhile, comic book piracy has become easier and more accessible and displaced some of the traditional sales.

At the same time, all the channels related to the traditional state of the market have continued to grow. Print sales have been gradually increasing, especially among the top publishers who retained their market shares. The number of brick and mortar comic book stores has been slowly increasing, despite the contrary for other types of content. The unique situation of the American comic book market seems to have resulted from a combination of three simultaneous developments.

The first is that the American comic book market has gone from a largely niche one at the end of the XX century to a mass one in the XXI. This move also entailed switching from one target audience to numerous diverse readers. Comics-based media contributed to this shift, as did new distribution channels that opened the way for diversity in comic book titles. The comics popularisation also drove the associated social stigma down, making comic books more accessible to all types of audiences.

The second is that the digital formats of comic books are largely considered as inferior relative to the print formats. This stems for example from a lower collector value. Despite this, the digital comic books retain the prices of their print counterparts, which makes them inaccessible to the traditional readers. This combination of lower perceived value and high prices prevented the digital sales from displacing the print sales. On the other hand, it also makes traditional readers choose between print versions and pirate digital ones, instead of allowing them a middle option of cheap digital purchase.

The third is that the comics publishers shifted their strategies to cater to high-paying collectors and new audiences. Recent trends show that the top publishers have increased the number of yearly reboots and new series to allow for easier 'jump on' points for new, more casual audiences. They have also begun investing in new minority characters to answer the growing diversity of the comic book reader population. At the same time, the publishers have increased numbers of variant covers for their titles, raising the value of their titles for collectors. Thus, the comic book issues sales have been increasingly reliant on collectors (including speculators) and the new, casual readers.

The theory of disruptive innovation shows that the disruption might still be approaching. Indeed, the current developments in the digital distribution shows that the main digital intermediary – ComiXology – is in a unique position, reminiscent to that of Netflix or Spotify at the beginning of their expansion. While the digital formats are currently considered inferior by the incumbent audience, new audiences have been shown to be more willing to make use of the digital formats. As ComiXology gains more options of reducing the prices, it will likely also access the readers who consider digital copies as inferior to print but still with a positive value.

On the other hand, the positive trends supporting the traditional channels are likely to soon reach their end. First, the current strategies used by the top publishers might eventually lead to their downfall, as similar investment in variant covers has in the past lead to a speculation boom and bust. Second, popularisation will eventually reach its saturation, and will no longer contribute to a growth in the print channel. In conclusion, it is likely that the comic book market is yet to experience its disruption, with the short form comic book issues the most likely to lose as a result.

Contribution to economic literature

Economic theory describes the interaction between similar competitors with comparable costs of production that dictate the equilibrium prices. Digital markets constitute a special case, where the production costs are close to non-existent. With no way of competing through better production technology, the competitors engage in improvement of user experience or in content bundling (in contrast to single product strategies). The market is even more complicated in the case of creative industries, where the legal providers compete with the illegal ones. The latter constitute a zero-cost and zero-price competition whose main disadvantages are illegality, risks and lower user experience.

The economics studies aiming to explain the market evolution of the creative industries can be broadly categorised into two branches. The first branch focuses on the common trends and the typical processes driven by digitisation. The main goal of these studies is to understand how business models are affected by the processes of digitalisation and how the new and old strategies relate to each other. A second branch focuses on the nature and effects of the new market participant – the pirate provider. This branch describes the consumer behaviour, interaction between the paid and unpaid channels, and the effects of piracy on supply and demand of creative content. Both branches of literature are continuously growing, and this thesis aims to fill some of the important gaps.

The conditions of the competition between the legal and illegal providers have not yet been fully understood. Numerous studies focused on specific determinants of the intention for piracy among the consumers. However, few studies looked at the competitive advantages between the paid and unpaid distributors and analysed their changes over time. This thesis combines the current knowledge on the effects of digitalisation to describe the specific values of both the paid and unpaid channels. It also describes how these advantages changed over time, with the evolution of technology, algorithms and the search for new ways of monetising creative content. Drawing from the literature on switching costs between legal providers, in this thesis I provide the first comprehensive discussion of the switching costs between the legal and illegal channels of distribution. As such, this thesis helps to understand what factors other than price and direct costs can explain the changing relative attractiveness of specific distribution channels for consumers, as well as describes what factors can constitute barriers for the usage of the unpaid channels.

Despite many studies on the effects of piracy, much is still unknown about its impact across creative industries. The current empirical research focuses only on few creative industries while largely omitting others. This severely limits the understanding of what attracts consumers to the unpaid channels as even within the studied industries the effects of piracy might be moderated by other factors. The existing literature shows that these moderating factors include, i.a., year of study, type and format of content, type of unpaid channel, type of paid channel and consumer characteristics. As such, the findings are not easily extendable to other industries. The comic books stand out as a good serial in nature, episodic, quick to consume and relatively inexpensive. At the same time, their value is strongly connected to collecting and fandom cultures. It is thus not obvious how digital piracy affects the consumption of comic books. In this thesis I provide the first estimates of the effects of piracy in the previously unstudied market of American-type comic books.

The economic literature explains the processes that transformed the major creative industries but fails to explain the evolution of some of the smaller markets. The typically observed changes include a decline in physical formats and brick and mortar retail, as well as simultaneous growth of digital

formats, digital intermediaries, piracy and online retail. The technological and cultural changes drive shifts in market power from large to independent publishers and individual, small-level creators. However, this thesis shows that other pathways of transformation are possible in smaller creative industries and thus that the current understanding of digital disruption is limited. The thesis documents the determinants that allowed the American comic book market to follow this divergent pathway as well as provides a discussion on the possible future.

The comic books provide a unique opportunity for studying consumer behavior and market development. This is because the comic book issues themselves are serial in nature and interconnected within the so-called comic book universes. These two factors allow to study the sales, readership and characteristics of large numbers of titles forming a joint experience. This is in contrast to other types of media, where most of the released titles constitute separate goods and thus cannot be easily analysed in terms of long-term evolution.

Finally, the case of the American comic book market provides insight for other industries facing a potential digital disruption. While digitalization introduces channels and formats with the potential of displacing the incumbents, it can also lead to the popularization of a medium as a whole. This latter outcome can be tapped to protect the prior business models, while the publishers work on incorporating the new distribution channels into their overall strategy. One of the advantages of digital channels is that they allow to expand content provision beyond the traditionally targeted mass consumers. This means that incumbent business, while exploring the new possibilities, should focus on extending their range of products to cater to both their incumbent primary customers and to the new audiences. Last, for the digital formats to successfully compete with the unpaid competition, the prices have to be set so as to reflect their actual value. This, however, might mean setting prices lower than for the traditional formats, as the digital formats might be initially considered as inferior.

Chapter I: Digital disruption

To fully understand the challenges and opportunities posed by digitalisation, one has to first consider the economic processes driving them. Digitalisation abolished many of the barriers and costs that have shaped the dominant business models of XIX century. At the same time, it has provided new tools, new opportunities and opened entirely new markets that could be exploited to create new types of businesses or transform the existing ones. These changes challenged the market power of corporations and opened the way both for new service-providers and new ways of consumption.

Digital disruption can be understood as a forced change to the incumbent markets, brought upon by digital technologies and related new business models. The change may occur suddenly, in a way preventing the incumbent businesses from reacting and adjusting their models and strategies. On the other hand, it might take place over time, but remain unnoticeable and viewed as harmless – until it becomes too late for the incumbents to avoid becoming disrupted. In this thesis, the term “digital disruption” is used to denote a range of simultaneous and interconnected changes that were driven by digitalisation – whether directly or indirectly.

At a more microeconomic scale, to understand how specific newcomers have made their progress, it is useful to consider the theory of disruptive innovation first introduced by Bower and Christensen (1995). In its current form (Christensen et al., 2015) the theory of disruptive innovation defines two disruptive scenarios: when a relatively small newcomer enters the market by catering to low-end customers (i.e. those with lower expectations than those currently answered by the incumbents) or when it enters the market by catering to new audiences (i.e. those so far omitted by the incumbents). The two scenarios are called, respectively, the *low-end* and the *new-market* footholds.

Importantly, the disruption typically emerges as the incumbents focus their efforts on their most demanding customers – omitting or exceeding the expectations of other audiences. As such, the entrants identify an area where their product or service will be able to gain the said foothold. As entrants invest in the disruptive innovations, the incumbents are instead prioritising sustaining innovations – those that are aimed at improving the product and service for their core base of customers. Typically, the core customers first consider the entrants’ product as inferior. Over time, as the entrants’ product improves, they begin to switch to the new provider and thus disruption occurs.

The theory implies a strategy for the incumbent businesses. As suggested by Christensen et al. (2015), the general approach should be to invest in sustaining innovations to solidify the connection with the core customers, while simultaneously investing in own adaptation of the disruptive innovation. Thus, the general direction for the incumbents would be to develop a secondary business, which will sometimes eventually displace the original one. Admittedly, as the authors note, the exact strategies in face of a disruptive challengers might differ on a case by case basis.

This Chapter provides the economic background to understanding the ways in which digitalisation affected incumbent businesses. To fully understand why the outcomes for the comic book industry differed, it is imperative to first understand the processes that lead to the disruption of many industries and the exact ways these industries were reshaped. While the Chapter focuses on the general patterns of disruption entailed by digitalisation, Chapter II of this thesis applies an in-depth look at the comics industry in the light of digitalisation processes.

Note 1. The comprehensive books of McAfee and Brynjolfsson (2017), Parker et al. (2016), Reillier and Reillier (2017) on the platform economy and impacts of digitalisation provide discussions of many of the points of this Chapter. Whenever this Chapter goes beyond the framework established in these books, a citation is provided to specific additional sources. Exact citations are also provided whenever specific concepts come directly from only one of the cited books.

I.1. Information goes digital

One of the first important technological changes was the advancement in digitisation of information. Before the digital era, industries had to rely on storing their information in physical formats. These included, for example, paper, vinyl, tapes or analogue signals. However, the widespread adoption of computers sparked a global movement towards ‘weightless’ digital formats. The dynamic process was additionally fuelled by simultaneous advances in hardware (better computers for lower prices) and compression algorithms (more information taking up less digital storage space).

Together these factors contributed to the creation of – as described by McAfee and Brynjolfsson (2017) – the free and perfect. Free, because replication of digitised information essentially involved no costs. The products of the analogue era required resources to copy (e.g. time, paper, copying machines) and storage to hold (e.g. shelves, storage rooms). However, copying of digital content consumed almost none of the human time, did not involve any resources other than the computer, and required no additional storage space.² Perfect, because digital replication yielded perfect copies of the original item. In the analogue era, most of the copying involved some form of quality loss (e.g. photocopying) or at best required access to the master version (the original item) or large time inputs (e.g. to manually copy a document). However, digital copying required little time and resulted in perfect copies of the source.³ As such, digitalisation made information replication virtually costless – both in terms of direct costs and quality loss – and the management process much cheaper.

Internet added a third attribute by making the digital information instant and the importance of this aspect has only grown over time. The digital formats themselves made it easier to transfer content across distances and among people, essentially by allowing large amounts of data to be stored on relatively small physical carriers like disks. However, the process still required for the carrier to be transported to a different location – sometimes involving long-distance travels. The Internet lifted these constraints by allowing for instant connection between any two devices – regardless of the distance separating them. At first, the internet served as a space for hosting personal web pages, and provided only limited capabilities in terms of creative usage. At this point the web consisted mainly of hyperlinks to various websites that presented content but allowed no direct interaction by the users. This era of the web was retroactively named as Web 1.0 and lasted roughly until 1999, when the worldwide web gradually started to facilitate dynamic content and interpersonal exchanges. As files became smaller and internet became faster, this allowed to replace most of the traditional ways of exchanging information with a simpler and faster alternative – one that also involved the attributes of free and perfect. It also removed the typical constraints imposed by time of day and working hours, as many exchanges could now take place without the intermediation of a living

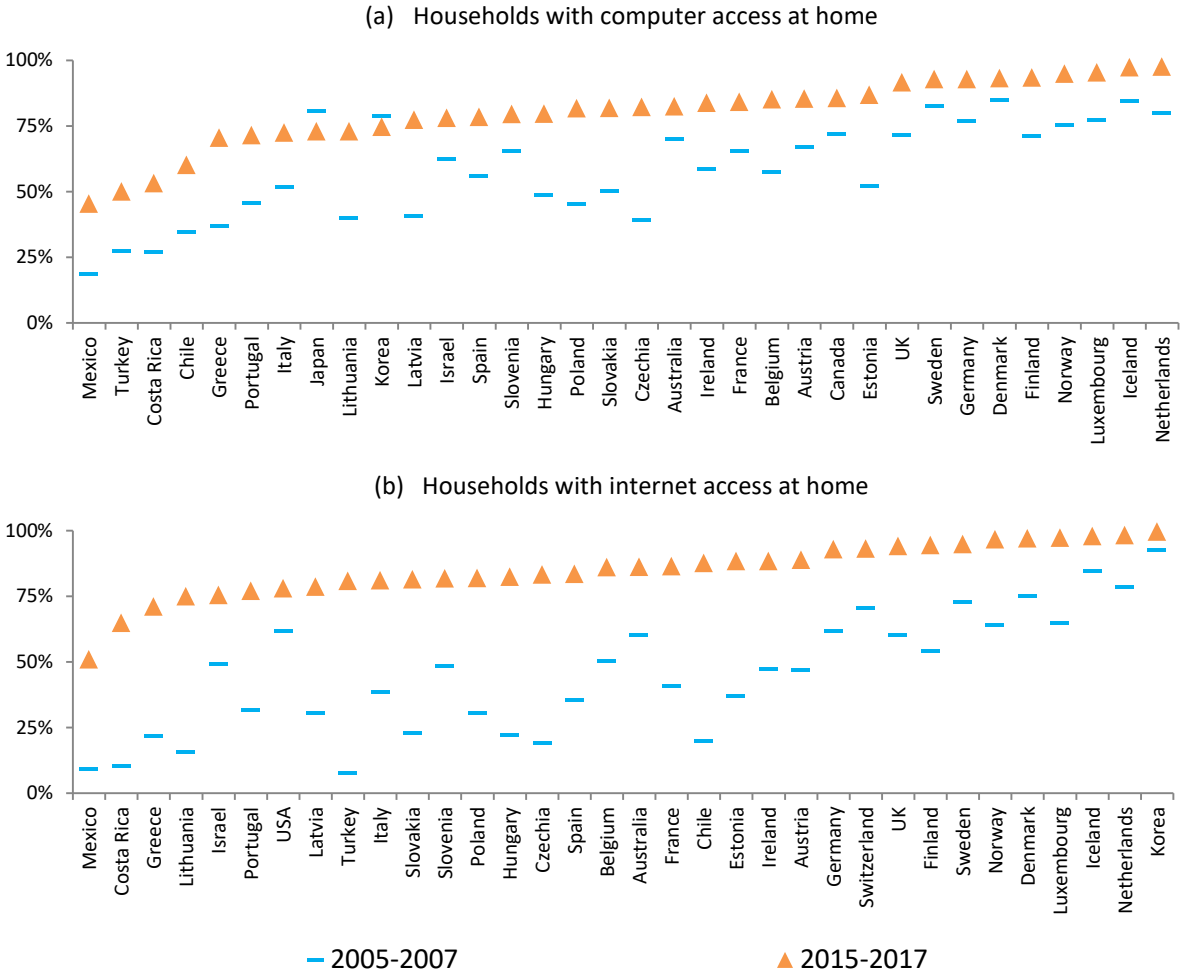
² While the storage space on any hard drive is actually limited, the technical capabilities quickly outpaced the general needs for storage. Moreover, renting additional storage in the cloud became very cheap.

³ Notably, one can create a digital copy with a quality loss (e.g. in image resolution or bitrate) – e.g. to reduce its size – but the choice belongs to the copyist.

person. The advent of social networks such as Facebook, file-hosting services, and other protocols further contributed to the growth of online markets, file exchanges and digital distribution. This era of the web was dubbed Web 2.0, and also named as, e.g. the Participatory Web.⁴

Thus, digitalisation and internet removed most of the pre-existing barriers in the process of information exchange. As such, it disrupted most of the services built on the foundation that the barriers are still in place and require additional resources to be overcome. Some examples include postal services – established around the existence of monetary, time and effort costs of sending a letter, but largely replaced by the free and instant e-mails; or photo companies – established around the existence of monetary and quality costs of reproducing photos and images, but largely replaced by the digital cameras and perfect replication options.

Figure 1. Computer and internet access at home in OECD countries, in 2005-2007 and 2015-2017



Note: Data presented for countries with data available in at least one year between 2005 and 2007 as well as at least one year between 2015 and 2017. The markers represent the earliest and latest data points available. Source: Own elaboration based on OECD.Stat data.

Importantly, the process is still ongoing as computer and internet access have not reached saturation in many regions of the world. Figure 1 presents the growth in computer and internet access across

⁴ Web 3.0 is currently discussed as the era when the internet search protocols evolve to encompass not only the literal meaning but also the context of a term. It would thus allow for a more comprehensive interaction between a human and computer and potentially AI-assisted activities.

households in different OECD countries, between 2005-2007 and 2015-2017. In the more developed economies, computers have long shifted from luxury goods or firm hardware to standard household appliances. However, the technological penetration is still lagging behind in some of the less developed countries. The fact that the changes are still ongoing carries two simple implications: first, that many of the processes in these countries are yet to become more efficient and productive in the coming years, and second, that the global share of internet-connected businesses and customers will continue to grow for some time to come – providing additional benefits to all users around the world through network effects (see Section I.3.1.).

For the case of cultural goods, these developments drove the shift from offline to online distribution. First, they have paved the way for online retailers, who could send physical items from distant warehouses – largely removing the constraints of limited store shelf space. Second, with the progress in internet connection speeds and shift to Web 2.0, direct digital distribution became possible, with consumers being able to purchase digital files with content directly from a distributor. This development reduced the distribution and production costs to essentially zero, as well as reduced the time of transactions to minutes. Finally, internet connection speed eventually allowed to stream cultural content on-the-go without the need for digital storage space. This last development largely transformed cultural goods distribution into a service (rather than trade of goods) with no actual exchange of the ownership of content. It also contributed to a switch from direct payments to ad-based or subscription-based models, in a way reminiscent of traditional radio and premium cable TV.

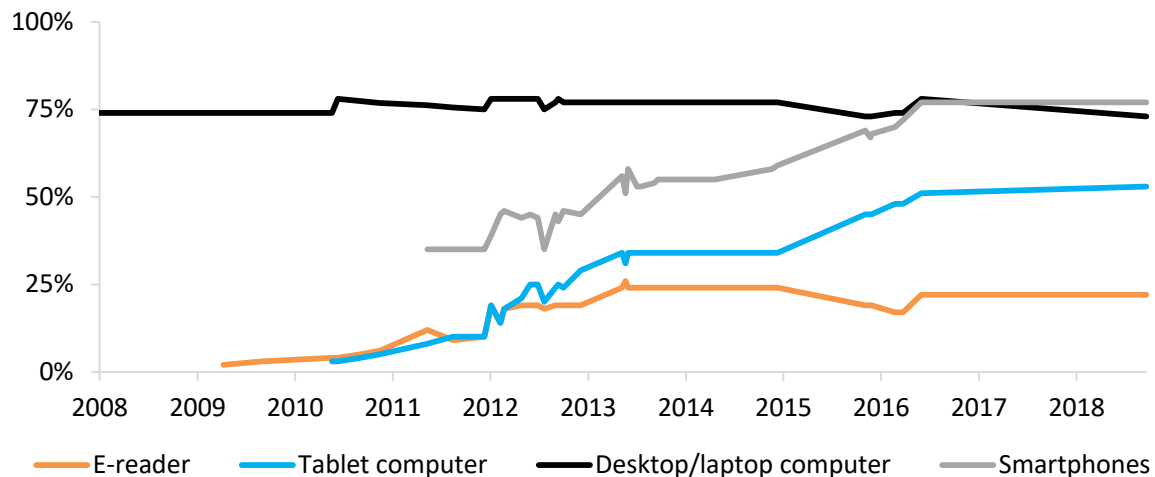
I.2. Getting small, getting mobile, getting connected

The growing access to the internet and the economy of free, instant and perfect has been additionally facilitated by the spread of mobile devices. At first, this constituted mostly laptops, though the first models were much heavier and more cumbersome than the ones popular nowadays.⁵ However, these were eventually joined by other types of devices. For some time, the MP3 players gained in popularity, replacing their cassette and disc player predecessors. Moreover, mobile phones entered the market, starting primarily as phone devices but slowly developing more integration with other digital technologies. In 2007, Apple introduced their iPhone, marking the beginning of a new generation of devices – the touchscreen smartphones. The modern smartphones offered most capabilities of larger computers, eventually with enough computing power to allow for fast internet connection, streaming, web browsing, games, music (in this regard, smartphones replaced the MP3 players) and a vast number of other applications. By 2016 the share of adults with smartphones in the US reached that of adults with desktop/laptop computers, with more than half of adults also owning a tablet and every fifth an e-reader. These changes basically meant that most consumers are now connected all the time and able to reap the benefits of digitalisation whenever they like to, regardless of their current location and time of day (see Figure 2).

From the perspective of app producers, every person acquiring a smartphone was an entrant to a new and ever-increasing market. Smartphones allowed to access all the previously available facilities and services provided over the web, but they also created a demand for smartphone-specific content. Thus, the growing interconnection of users around the world contributed to a rapid development of new applications, platforms and algorithms – typically combining the available technological solutions to create new value.

⁵ Reportedly, the first portable computers from the 1980s weighed over 10 kgs.

Figure 2. Share of adults in the US, owning devices: e-readers, computers and smartphones.



Note: no changes assumed between data points.

Source: Own elaboration based on Pew Research Center data (<http://www.pewinternet.org/fact-sheet/mobile/>).

I.3. The platform, the reseller and the algorithm

Most of the disruptive power brought by digitalisation came from the development of new kinds of platforms, new kinds of market distributors and new kinds of algorithms. The previously described changes in technological capabilities, hardware and access were crucial for these processes. This is because they formed the base infrastructure for the further innovations that sought to leverage the free, perfect and instant to the highest extent possible.

Notably, the umbrella term of ‘platform’ is commonly used to describe a large variety of different, typically online, services. Reillier and Reillier (2017) make a good case to distinguish between platforms and what is essentially an online reseller of content (an e-commerce business). They define platforms as “[Businesses] creating significant value through the acquisition, matching and connection of two or more customer groups to enable them to transact” (pp. 22). The online resellers such as Netflix would therefore not qualify as a platform, as they do not facilitate direct transactions between the content producers and the viewers. Instead Netflix acquires licenses to distribute specific content and arranges the transactions themselves. Still, both platforms and online resellers entail some form of disruption and rely on similar processes to earn their profit.

Moreover, some online resellers are in the process of opening up to platform functionalities. For example, Spotify has started as a distribution service – distributing music for labels according to specific licenses. However, it is currently⁶ expanding its *Spotify for Artists* service, whereas artists can create verified profiles and manage them. This includes managing personal information, biography, photos, music library and access to statistics. Additionally, Spotify is in the process of rolling out individual music uploading functionalities – effectively adding platform capabilities for the artists. As Spotify benefits from effective matching of artists with listeners, this means that Spotify provides the infrastructure for efficient transactions between artists and consumers.

⁶ As of 2018-12-04.

Note 2. Many of the features described in the following subsections (I.3.1.-I.3.4.) can be attributed to both platforms and online resellers. I thus focus on the characteristics of both in general unless a specific factor or characteristic is indeed specific only of platforms or resellers (whereby I indicate so). In subsections I.3.1.-I.3.4. I focus on the characteristics of platforms and services that are most relevant as background for the further sections of this thesis. While other tools and characteristics could be potentially included, they are beyond the scope of this thesis.

I.3.1. Network effects, matching and user experience

Most platforms rely on the free, perfect and instant to facilitate efficient matching between different sides of participants. The efficient matching process is largely driven by the potential to benefit from network effects. Network effects imply that a specific platform becomes the more valuable, the more users it currently has. Indeed, this is typically true for platforms, regardless of who represents the specific sides in a platform. Any social media service becomes more valuable to participants as more of their friends or people they are interested in also use it. An Uber driver will benefit if Uber has many customers, while an Uber customer will have higher utility from the service if there are many drivers (reducing the time spent waiting for a car). An eBay buyer will benefit from a larger diversity of suppliers, and suppliers will benefit from a larger number of buyers.

The platform owners can leverage the data on the transactions to develop more efficient matching algorithms – thus creating additional value for the users. As digital resellers do not facilitate direct transactions between users, the network effects are less pronounced in their case. However, as in the case of platforms, they can create value from the sheer fact that more users and transactions occur in the service. Thus, the services become more appealing as more users use them, because the service owners use the additional information to match and tailor content to other users.

The network effects and matching algorithms offer significant advantages over the traditional, non-digitalised ways of conducting business. For one, they facilitate exchanges that would never have taken place without a sufficiently large platform or marketplace with many customers. Consider an AirBnB user who lives in an area that does not attract any tourist attention. Likely, no hotels would conduct business in such an area and the household owner would not be able to find any potential customers on the street. To be able to rent the apartment at all, they would have to offer extremely low prices. However, there might exist a single traveller with preference for this region of a city (e.g. because it is closer to their family place) and who would be willing to pay more to find a lodging specifically in that area. Without the platform those two sides would have little chance of making contact and conducting a transaction. However, because of the platform they can easily find each other, and the owner can charge a relatively high price to the one customer with large willingness-to-pay. Similar case can pertain to a person in possession of a specific, rare, old and out-of-print book. The person would have a difficult time trying to sell it and at best could get a ‘per weight’ price at a local used books store. However, using a platform for online transactions, the person might be able to make a connection with the few people from around the world interested in finding this specific book. These potential buyers would never be able to find it without the intermediation of a large platform, even despite a large willingness-to-pay for the item.

At the same time, platforms and resellers can increase their users’ experience by tracking how the users interact with the service itself. If users require much time to find a specific popular type of

content, or if the users give up while using a specific feature it is a strong indicator that changes are needed. Changes on the other hand, can be tested on subsamples of customers before being rolled out to the entire user community by checking if they increase engagement – relative to the subsample with previous layout. In both cases, the feedback process would be the more reliable and precise, the larger the user base already is.

Algorithms help the resellers in upgrading their services by allowing to better target customers. A large database of user decisions can reveal consumption patterns that allow matching product advertisements with preferences revealed by the customers through other transactions. For example, an algorithm could learn about items often bought together by users in general, so that when a new customer buys a set of forks, the algorithm can recommend them to also buy a set of knives, spoons and perhaps new dishes as well. The same algorithm could pick up on tastes of the customers, knowing that those interested in a specific item also often enjoy specific others. Thus, it would not recommend any knives along with the forks, but the knives that are a good match for the forks (as deduced from the preferences of others). The quality and accuracy of this matching will largely depend on the data that the algorithm can rely on to arrive at the proper conclusions.

Thus, network size plays a crucial role in the success of platforms and online resellers. On the one hand, it carries direct effects for the users who benefit from being able to interact with a larger number of other users. On the other hand, they allow the service provider to better tailor the service and content to the needs and preferences of its users. These large benefits also mean, that an early entrant to any market can achieve a large head start by accumulating a large user base and utilising it to quickly improve on their original product. As other competitors enter the market, the customers of the incumbent would be partially locked in due to large switching costs associated with changing the provider to one with no user base (see Section I.3.4. for more on the lock-in effects).

I.3.2. Unbundling, market aggregation and homing

Another feature of some of the digital services is the unbundling of content. Before the rapid digitalisation, some goods or services were typically provided in bundles. These might have served, for example, to reduce the costs of production or to eliminate unused capacities. For example, a printed newspaper was typically printed and distributed in regular time intervals. As each copy consisted of a set number of pages, the pages were filled with news content, advertisements and other announcements. Producing less content for a newspaper issue would either result in blank pages or in a format reduction – which could be inefficient in terms of costs in large-scale printing. However, as internet and online news services expanded, the typical constraints stopped applying. A news story no longer had to be delivered jointly with a bundle of other stories. Instead, it could be published on its own, with no sunk costs involved. The stories also no longer were constrained to the publishing time associated with the print version, which actively prevented real-time reporting except in television. Online news media were able to deliver any news at any time of day and night. The news industry was severely hit by the digital media services mainly because the latter could deliver perfect copies of content with almost no distribution costs and no spatial and time constraints. However, the online outlets also had the advantage of being able to unbundle the content previously constrained by the physical carriers.

Still, some digital resellers rely on rebundling or aggregation of content. These services often include subscription-based models allowing users to access content, previously distributed by separate

providers, as part of a one joint subscription plan. Such approaches are especially attractive as consumers prefer one well-stocked store rather than multiple smaller vendors.

Market aggregation is a tool mostly used by the digital resellers, with the aim of power consolidation. A service that aggregates a large share of the available content or providers – especially if it has exclusivity rights – can generate high switching costs both for the original providers and for the users. A reseller with dominating market share has a strong negotiation power as it also has access to most of the consumers. A provider withdrawing its content from the reseller would have to find another suitable outlet, which might be difficult. Similarly, a customer would be unwilling to switch to a different service provider if the other provider offered access to less content.

Some markets are dominated by more than one platform/service, requiring the potential users to choose which one they will use. On the side of producers, this might entail e.g. choosing which operating system should a newly developed app be compatible with. Multi-homing (i.e. using several channels) can help reach a wider audience, but it might also entail additional costs of porting to different channels as well as reduced control over the data and management process. Moreover, the producer might have an additional incentive for single-homing if their interests are aligned primarily with one of the outlets. In such cases, single-homing would increase the switching costs between services, drawing more people to the one chosen.

The fact that resellers rely on content from other producers, implies that they need to compete for both the customers and for the producers who decide on where to distribute their content. These two sides reinforce each other by way of previously described network effects. On the one hand, the customers benefit from larger bundles and are therefore more attracted to resellers who have more comprehensive catalogues. On the other hand, producers might find themselves locked in with resellers who have access to the largest base of customers, as they themselves cannot reach them without the reseller's intermediation. The fact that resellers can tap into large amounts of data also shields them from providers' attempts to become independent, as they would need to start their own distribution with no prior knowledge on efficient matching of content with consumers. Finally, without the intermediation of resellers, the original providers would only be able to offer their own content (not that of other providers), thus lowering the size of the content base for the consumers.

1.3.3. Openness, complementarity and moderation

Another common feature of platforms is their openness to contributions of its users. In fact, this is one of the factors that boosts the network effects and helps platforms gain momentum in their growth. Opening part of a service may also boost the value of the overall product if the content provided by the users is complementary to the platform. For example, the value of smartphones largely comes from all the apps that can be installed and used through them. The Android operating system entered the smartphone market and successfully competed with the Apple iOS systems by being open-source, free-to-use on mobile devices and with relatively lax restrictions on registering new apps in their app store.⁷ This openness (greater than the openness of iPhones) allowed Android to take over the market share, with 88% of smartphones sold in the third quarter of 2016 having this system installed (Brynjolfsson and McAfee, 2017). Most social media platforms are open to user

⁷ iOS, on the other hand, is the opposite of that: restricted to the Apple iPhone smartphones, with highly moderated catalogue of available apps.

entrants and provide much freedom in terms of content creation. Crowdfunding platforms allow everyone to start a project, with the crowdfunded items ranging from feature films to potato salads.⁸ The fact that many platforms rely on user-created content and hold no content of their own, highlights the need for openness. As the popular quote from Tom Goodwin goes:

“Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening.”
– Goodwin (2015)

The typical problem that arises with openness is the potential abuse of the platform by the users. Some contributions do not increase the overall value of a platform or might even harm it. Inappropriate driver behaviour in Uber, harassment or hate speech on Facebook, fake items on Alibaba or disappointing accommodation experiences on Airbnb can all lead to customers dropping out despite the fact that these platforms themselves are not directly responsible for the cited issues. Therefore, most platforms involve at least some level of moderation, targeted at ensuring that specific terms of use are respected. These efforts often rely on the crowd self-moderation – i.e. by allowing the users themselves to curate the content by flagging, downvoting or reporting any platform misuse. For example, users of Facebook might report posts for violation of the Facebook terms of use – with the reports subsequently reviewed by human operators who decide on how to deal with specific content. Simultaneously, Facebook uses algorithms that search for content potentially violating its terms of use (e.g. nudity). In another example, Uber allows its users to rate the drivers and can terminate its relationship with those drivers who consistently receive low ratings.

Thus, openness might create both positive and negative effects. Platforms need to include some form of moderation or content curation to successfully protect their service from the potential abuse from their users. While this is sometimes partially possible through inclusion of self-moderation mechanisms (i.e. by allowing the users to report or flag the content themselves), the process is not always effective and might lead to deletion of legitimate content. It also retains a time window in which the violating content remains uploaded and accessible. These issues resonate stronger nowadays as the European Commission works on the new European directive regarding the copyrights in the digital single market, whose Article 17 (previously 13) aims at making platforms liable for the content uploaded by its users. Many NGOs suggest that the expected level of moderation would require an impossible automated filtering mechanism (see e.g. Tarkowski, 2018).

I.3.4. Lock-in

As business models changed, so did the switching costs between various players, as well as the tools available to modify them. Switching costs can be defined as *“one-time costs facing the buyer of switching from one supplier’s product to another’s”* (Porter, 1980). Burnham et al. (2003) add to this by stating that the switching costs do not have to be incurred instantly at the time of switching, with the example of learning costs that are temporary but incurred over longer periods of time. There are several types of switching costs, with digital tools allowing to manipulate at least some of them.

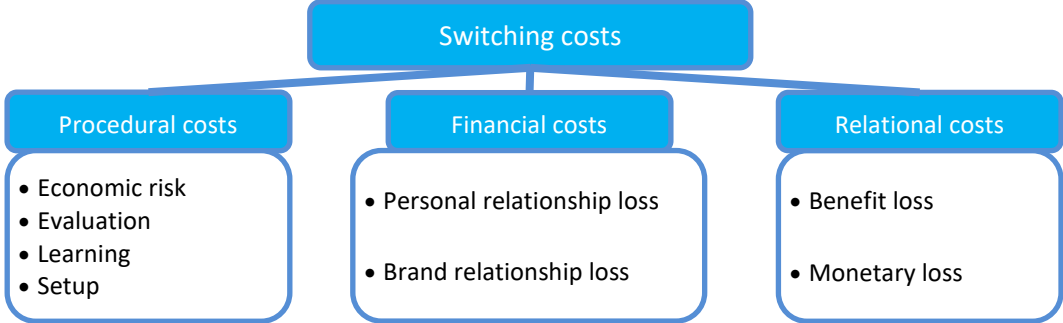
⁸ See Kickstarter Veronica Mars movie project (<https://www.kickstarter.com/projects/559914737/the-veronica-mars-movie-project>; accessed: 2018-10-29) that earned more than 5 million dollars, or the Potato Salad project that earned more than 50 thousand dollars (<https://www.kickstarter.com/projects/zackdangerbrown/potato-salad>; accessed: 2018-10-29).

The costs identified in the literature can be categorised by their type (see Figure 3). One such attempt has been made by Burnham et al. (2003), who distinguished between three main types of switching costs: the procedural, the financial and the relational. The procedural costs refer to costs associated with the time and effort necessary to switch between different providers. The financial costs are associated with material costs involved in performing the switch. Finally, the relational costs refer to relationships developed with the current provider and are thus mostly psychological in nature. The typology has been acknowledged in later studies, including a meta-analysis of switching costs studies (Pick and Eisend, 2014).⁹ Burnham et al. (2003) introduce a larger spectrum of cost facets that fit three broader categories: economic risk, evaluation, learning and setup costs that make up the procedural costs; benefit loss and monetary loss costs that make up the financial costs; personal and brand relationship loss costs that make up the relational costs. In more detail:

- **Economic risk costs** are defined as uncertainty risk, associated with the possibility that adopting a new provider will lead to a negative outcome. Thus, uncertainty can be considered as a switching cost that disappears as the consumer gains insight on the new provider. Importantly, Bettman (1973) discerned two faces of the risk – the inherent risk and the handled risk. In his framework, the inherent risk describes the general risk associated with a consumption choice, while the handled risk is the actual individual risk incurred by a person. The handled risk is lower than the inherent risk, as it reflects the inherent risk reduced by information and knowledge of the consumer. One of the implications is that if switching to a new provider is associated with a continuous risk, learning and know-how acquisition could reduce it – making it a switching cost.
- **Evaluation costs** are associated with the time and effort related to the search and analysis needed to make an informed decision on switching.
- **Learning costs** are the costs related to the acquisition of knowledge or skills necessary to use a product (e.g. from a new provider) more efficiently.
- **Setup costs** relate to time and effort spent on establishing a relationship with the new provider or preparing a product for use.
- **Benefit loss costs** refer to potential benefits that the consumer had due to pre-existing relationships with the current provider (examples include loyalty programmes, discounts, etc.).
- **Monetary loss costs** are the costs associated with one-time fees that do not include paying for the product itself.
- **Personal relationship loss costs** are associated with psychological loss due to ending pre-existing relationships with people associated with the incumbent provider (e.g. customer service).
- **Brand relationship loss costs** relate to the breaking bonds and established relationships with specific brands or companies.

⁹ Jones et al. (2002) proposed a different typology, with six dimensions of switching costs in services: lost performance costs, uncertainty costs, pre-switching search and evaluation costs, post-switching behavioural and cognitive costs, setup costs and sunk costs. They also labelled these six dimensions in three broader categories: continuity costs associated with the termination of the previous relationship; learning costs associated with the process of becoming accustomed with the new provider; and sunk costs, that are psychological costs associated with the perception of the non-recoupable time, effort and money that was invested in the previous relationship. Also, for the purpose of their meta-analysis, Pick and Eisend (2014; following Polo and Sesé, 2009) distinguished between firm-related, buyer-related and market-related switching costs. Pick and Eisend (2014) then provided a more detailed list of antecedents of switching costs, that integrated their review of existing literature and that fit within these three broader categories (the Pick and Eisend, 2014, article includes lists of variables in the literature that fit within these antecedents).

Figure 3. Typology of switching costs as presented by Burnham et al. (2003).



Source: Own elaboration based on Burnham et al. (2003).

An additional effect of the digitisation was through reduction of some of these costs. Risk and evaluation costs were reduced by reducing information asymmetry and the effort required to gain knowledge on specific providers. Internet and social media made it easy to learn about a provider based on the opinions and experiences of other users. Quick access to video tutorials and help forums lowered the setup and learning costs associated with goods requiring some level of technical know-how. In extreme cases, platforms reduced any spatial and communication switching costs related to previous business models. For example, an online retail aggregator allows a customer to quickly compare the offers from several stores, allowing to easily pick a best fit. In a physical world, the customer would face evaluation costs due to, for example, the distances between the retailers.

At the same time, digitisation provided new tools to leverage the relational costs. Across the European Union, 77% of enterprises now have their own websites, while 40% use social media to develop their enterprise’s image or to market products (Eurostat data for 2017). These activities are typically aimed at bolstering a brand relationship with the customers – effectively increasing their switching costs associated with changing the provider. Moreover, 27% of enterprises use social media to interact with their customers (Eurostat data for 2017), thus also affecting personal relationship. Similarly, many prominent businesspeople take to social media and engage with whole communities, creating direct personal relationship between the customers and the creator. Additionally, profiles on social media encouraging community building help develop relationships between the customers of a specific provider.

Finally, the effects previously described in this section enhance the loss costs associated with switching providers. Large network effects might give a specific provider a head start, resulting in them getting the major share of a market. Such occurrences create lock-in effects as the competitors cannot offer the same type of value. For example, it would be difficult to compete with Uber as Uber has more customers and more drivers than any other similar app. As such, the drivers would not switch to a new app with fewer customers and the customers would not switch to an app with fewer drivers. Thus, the fastest growing platforms are able to quickly leverage network effects to create lock-in effects. Moreover, data collection allows many of the services to correctly tailor the experience to individual users, e.g. by accurately predicting the preferences and taste of their users. Switching to a different provider would in many cases necessitate starting from the beginning – with no tailored experience for the user. Services with large numbers of users can also efficiently test new layouts and interface changes, as well as track customer usage to identify the weak points of their

service in order to be able to modify it. Again, the larger services will be able to leverage larger user bases to create even further value for the customers.

I.4. Consumption growth, Culture 3.0 and the long tails

As technology and industries evolved, so has the consumption of culture. Digitalisation eased most of the physical constraints both for the distribution side and the actual usage. For the cultural goods, these developments meant freedom from constraints on consumption time and entirely new modes of consumption. The advent of mobile devices opened a new market for mobile apps, designed for short-period consumption. The evolution of MP3 players and later smartphones allowed to carry rich catalogues of music and the launch of streaming services allowed to view movies and listen to music with no worry of storage space. Similarly, e-readers allowed to carry numerous weightless digital books and to read them in cramped spaces. As such, mobile and smart devices loosened the constraints on cultural consumption, allowing easier devotion of spare time for further consumption.

Figure 4a. Average daily media consumption across the world (with forecasts for years 2018-2020)

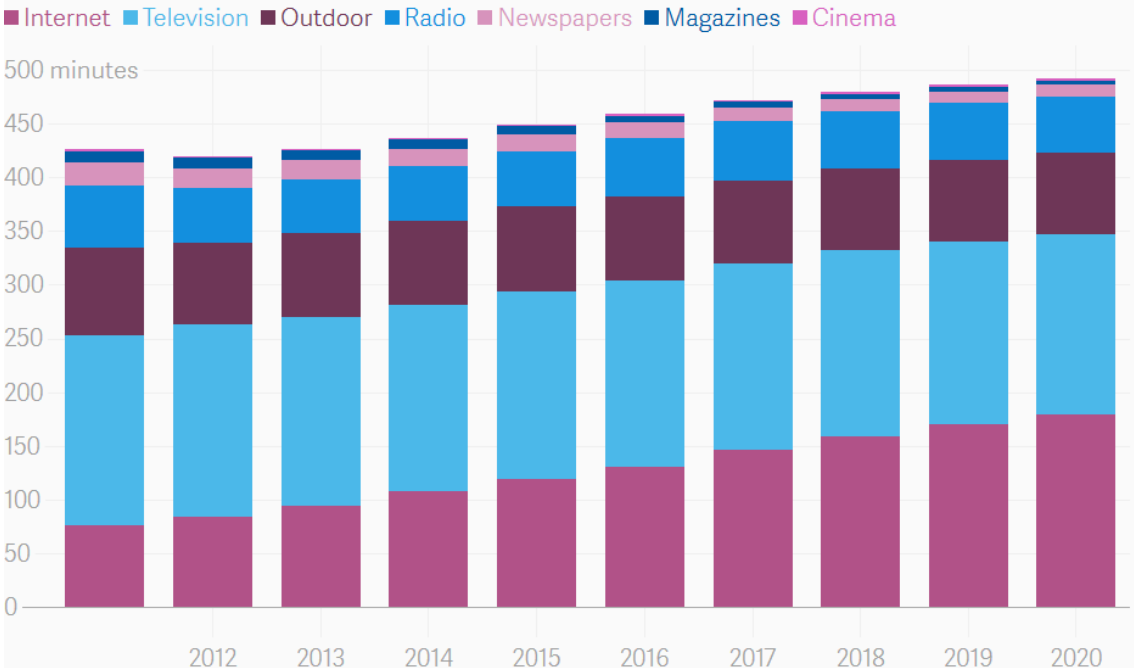


Figure 4b. Change in average daily media consumption



Source: Rodriguez, 2018a; based on Zenith data.

It is thus not very surprising that the average amount of time devoted to media consumption has exploded over the past two decades and that it was entirely driven by mobile devices. As reported by Rodriguez (2018a; based on Zenith data; see Figure 4a and Figure 4b), the average daily time devoted to the consumption of media has been on the increase, rising from app. 428 minutes in 2011 to an estimated 479 minutes in 2018. The increase was mainly driven by internet-based activities on mobile devices, while the time on TV and desktop internet decreased. In a Deloitte (2015) report, the

surveyed streaming services consumers agreed strongly that the subscription allowed them to watch content when they want to (74% of the consumers) and where they want to (64% of the consumers).

Additionally, much of this time is currently spent multi-tasking. Activate (2018) report shows that in 2017, an average adult American spent more than 12 hours on consuming different types of media and that this contributed to an app. 31-hour day of different tasks. Video consumption constituted app. 40% of the media consumption, followed by music, messaging or social media and gaming. The company also predicts further growth in tech and media consumption with the advent of technologies such as self-driving cars. In the Deloitte (2015) report, 90% of the consumers admitted that they use other forms of media while watching TV. Among these forms of multitasking, only about 22% were related to the consumed programming. In the Deloitte (2017) report, the share of consumers multitasking while watching TV has increased to 99%. These developments have spurred new research areas focused on the influence of multi-tasking and cognitive overload on health and social outcomes (see e.g. Uncapher and Wagner, 2018 for a recent review).

The overload of media consumption, coupled with disappearance of production costs, contributed to the development of the attention economy approach to management. In principle, economics of attention base on the fact that currently various service providers mostly compete for capturing the attention of consumers, but that the attention supply itself is limited. This redirects the efforts of providers to investments in the attractiveness and user-friendliness of their offers. According to Yeykelis et al. (2014, 2017), consumers may switch between different types of content even as often as every 10-20 seconds. This shifting attention causes trouble for models reliant on advertisement revenues, as consumers tend not to stay long enough to view the ads. The competition for attention underlines why user experience has become the core focus for platforms and service providers.

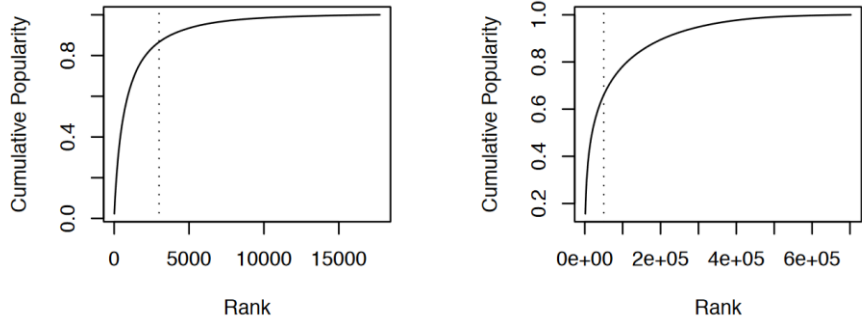
The evolution of social media and the shift in the creative capabilities of consumers contributed to what Sacco (2011) dubbed Culture 3.0. In a short expert paper, offering new perspectives for the EU 2014-2020 structural funds programming, Sacco (2011) proposed the distinction of three main stages of culture.¹⁰ The first, Culture 1.0 concerned the time when culture was mainly produced under patronage from the wealthy few. In this period, the cultural sector focused around few people who had enough money to finance the creation and performance of art. Culture 2.0 was driven by the emergence of a mass market for culture. In principle, it concerned the advent of the creative industries and the mass culture. One of the large changes was that investing money in artists could now return a monetary profit. Notably, while the audiences expanded, many of the barriers for creation from Culture 1.0 remained in place – with labels, publishers, etc. holding the key for monetizing art. Finally, Culture 3.0 is characterised by the dynamic improvement in access to self-production and creation tools, effectively freeing the means of creation and art monetisation. Whereas Culture 2.0 contributed to the expansion of audiences, Culture 3.0 contributed to the rise of various kinds of creators – often merging the roles of consumers and creators into one and the same. These outcomes are driven mainly by the trends described earlier, as well as social media and various online platforms. On a final note, the three stages overlap, with some types of creation still partially reliant on patronage (e.g. art), and the creative industries still holding much of the market power. Interestingly, some of the crowdfunding platforms of Culture 3.0 effectively introduced crowd

¹⁰ Admittedly, the classification by Sacco (2011) did not spread across discussions on culture in the same vein the Web classification did (Web 1.0, 2.0, 3.0, etc.). However, the importance of the cited document and the accuracy of the perspective are important enough to describe them in this thesis.

patronage of cultural content, with a notable example being the Patreon¹¹ service, where creators can gather monthly voluntary contributions, specifically to be able to continue their work.

As Culture 3.0 allowed for numerous creators to enter the market, the amount of available content increased – contributing to the emergence of a large number of less popular creators. As the distribution largely shifted from brick and mortar stores to online distributors and from the physical formats to ones fully digital, the limits on the numbers of creators participating in the market were effectively dissolved. Previously, the market was dominated by the few creators with highest potential for large reach¹². Creators whose potential was mostly limited to niches or communities spread out around the world made for a poor investment, as their buyers were difficult to reach and profit from. In Culture 3.0 this was lifted and any artist could make a profit – even if by reaching a small fanbase from a few distant countries. This connection was largely facilitated by the advent of algorithms and recommendation systems that matched content with consumers likely to enjoy it.

Figure 5. The long tails of music and movies (Goel et al., 2010)



(a) The long tail of Netflix. The dotted vertical line at 3,000 indicates the typical inventory size of a large brick-and-mortar retailer. (b) The long tail of Yahoo! Music. The dotted vertical line at 50,000 indicates the typical inventory size of a large brick-and-mortar retailer.

Source: Goel et al., 2010.

The emergence of the large amounts of low-demand content effectively created a new type of market, rivalling its mass market counterpart. Anderson (2004) observed this in his Wired article and coined the term of “long tails”, while referring to the previous period as one with “hit-driven economics”. Notably, Anderson (2004) points out that an average Barnes & Noble store can hold 130,000 book titles, but that in the online Amazon store, more than half of book sales comes from titles outside of the top 130,000. Brynjolfsson et al. (2003) estimated that in 2000 the increased product variety provided by online booksellers increased consumer welfare in the US by app. \$731 million to \$1.03 billion. Similar dynamics can be observed for other content entering online distribution. Zentner et al. (2013) showed that when customers of a large video rental company moved from brick-and-mortar outlets to online orders they became more likely to take up niche titles (and less likely to take up the blockbusters). The authors note, that a physical store typically hosted a selection of 2,000 titles, but that a catalogue of more than 100,000 was available online. Goel et al. (2010) show that both Netflix and Yahoo! Music also exhibit long tails that satisfy significant demand, despite consisting of items which would not have made it to brick and mortar stores (see Figure 5). Similarly, by 2015, self-published books have grown to encompass 18% of the overall book market

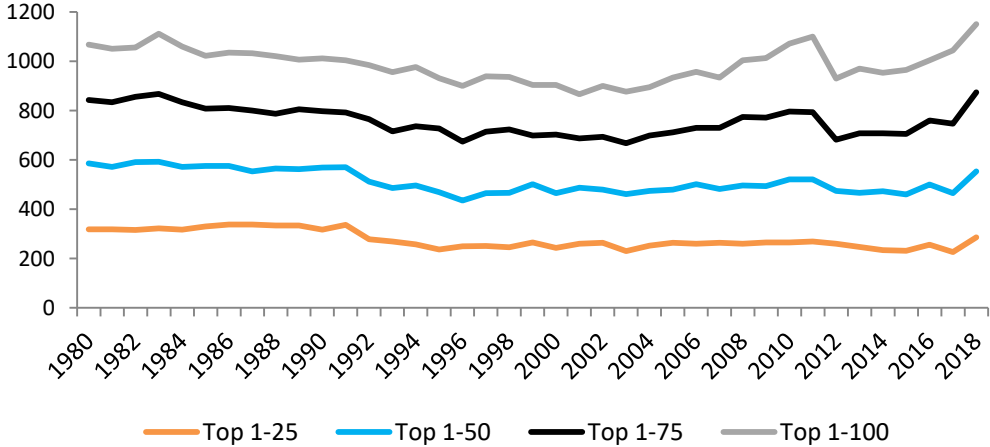
¹¹ <https://www.patreon.com/> (accessed: 2019-01-27).

¹² At least this was the motivation of publishers when choosing whose creation to publish. However, before data-driven solutions were introduced, this meant basing decisions on often inaccurate intuition.

(Wikert, 2015). Moreover, the self-published titles have surpassed the aggregated share of the top 5 publishers across Amazon ebook sales (Author Earnings, 2016).

The emergence of the long tail also implies emergence of new superstars. Previously, publishers focused on the creators with seemingly large potential for success, while discarding the others. This entailed occasional misjudgements and promotion of artists who did not reach success. However, the same system implied that a certain number of artists who would have been able to reach mass audiences, was discarded due to misjudgement on the part of the talent-seekers and publishers. With the emergence of the long tail, these creators were now ‘given a chance’ to break through to the ‘head’ of the distribution, even when starting at its tail. As shown in Figure 6, this contributed to a growing turnover of songs in the weekly Billboard Hot 100 charts – especially among the lower ranked (e.g. top 75-100) titles. While the yearly numbers of unique songs within the charts have been decreasing before the end of the XX century (implying lower turnover of the top songs), they have begun increasing from app. 2003. The changes in the music market were reflected in the chart methodology – in 1998 the chart switched from a “singles” chart to “songs” chart due to issues unrelated to digital distribution.¹³ By 2005, the chart included paid digital downloads (e.g. from iTunes). By 2007, a few streaming services have been included as well and in 2012-2013 services such as Spotify and YouTube were added to the formula. This last change decreased the number of unique songs appearing in the charts within a given year, but did not revert the increasing trend.

Figure 6. Number of unique songs appearing in the weekly Hot 100 Billboard charts in years 1980-2018.



Source: Own elaboration based on data from the Billboard Hot 100 charts.

Similar patterns emerged in the book industry, where the share of self-published books among the best-sellers has been on the increase. Waldfogel and Reimers (2015) found that while there were no self-published titles among the bestsellers before 2011, the share has risen to app. 5-10% by 2014, with further 4% of the bestsellers coming from authors who had previously self-published. These shares were even higher in some genres such as “romance” where they reached the levels of 20-30%.

¹³ Prior to the change, only songs available in a physical format – as singles – were considered for the chart. However, this resulted in some labels skewing their strategies regarding release dates of singles and airplay promotion of songs – motivating the removal of the ‘published as a single’ condition.

I.5. Digital disruption – summary

Table 1. Selected disrupting factors associated with digitalisation

	Description	Source of disruption	Examples of disrupted services
Characteristics of the digital goods			
Free	Copying and storing a digital file is essentially 0	Eliminated barriers for personal storage and mass replication	Space rental, physical carriers
Perfect	A copy of a digital file is exactly the same as the original	Eliminated barriers for loss-less reproduction	Photo services
Instant	Internet facilitates instant communication and data transfer	Eliminated distance, location, time and border barriers	Postal services
Hardware and access			
Computers	Better, automated and cheaper tools available to an increasing number of people	Ability to delegate tasks to a computer who does it faster and more reliably	Jobs relying on manual calculation or data cataloguing
MP3 players, E-readers	Portable player device with large storage capacity	Eliminated constraints on time, space and location for cultural consumption	Cassette and CD players
Smartphones, Tablets	A platform for a multitude of different applications	Eliminated constraints on time and location with regards to accessing services	Any businesses relying on access frictions or with fewer options (e.g. MP3 players)
Business models			
Unbundling	Dividing items previously distributed in bundles into single items	Eliminated constraints on ways of distribution	News stories
Rebundling	Aggregating the options (e.g. accessible for a monthly fee)	Consolidating power and creating lock-in effects for all	Human intermediaries (e.g. real estate, job seeking)
Algorithms	Leveraging data to create tailored content, efficient matches and positive user experience	Creating value, increasing with the amount of data available – contributing to lock-in effects	Businesses with no means of collecting and processing user data (e.g. brick and mortar retailers)
Openness	Leveraging the user base to create abundance of content, ideas, matches and transactions	Dynamic growth in available options and content, and freedom from asset management	Businesses constrained to own assets (e.g. taxi companies)
Underlying mechanisms and tools			
Network effects	Reaping benefits from own user base	Dynamic growth and lock-in effects for the first entrants with dominating market shares	Incumbents with no tools to utilise network effects
Long tails and culture 3.0	Large numbers of small-level creators	Eliminated barriers for participation; matching algorithms	Incumbents with limited catalogue space (e.g. brick-and-mortar stores)
Multitasking	Heavy consumption from more than one source at once	Emergence of new, instant, channels for consumption	Incumbents with no channels for catching attention
Switching costs	Barriers and loss costs creating lock-in effects with providers	Reduced some types of switching costs and introduced new tools to leverage others	Incumbents relying on the affected switching costs and those with no way to utilise network effects

Source: own elaboration based on concepts described in Chapter I.

Digitalisation brought about a disruption to the way businesses have been previously conducted. It has done so by changing the traditional constraints involved in sharing and distributing content, by making the content free, perfect and instant. It also featured the proliferation of new kinds of services that leveraged the free, perfect and instant to create new businesses, replacing the no longer efficient incumbents. These new platforms and online resellers typically relied on network effects, supported by a variety of traits like openness or market aggregation. They have also used the

data to enhance customer experience and matching between different sides of users. Some of these services used digitalisation to unbundle and/or rebundle some of the content – providing a new kind of value to the customers. All these processes have been driven by advances in computational power, as well as in availability of hardware and interconnectedness of societies around the world.

From the other side, these changes contributed to a shift in how and when consumers acquired content, as well as what type of content they consumed. Digitalisation brought about heavier consumption, new ways and opportunities to utilise content and an enormous number of new options to choose from. This last change both expanded the pre-existing market and created entirely new ones, quickly populated by eager consumers and new creators. Table 1 summarises the processes and concepts described in Chapter I.

Digitalisation changed most of the industries around the world, but challenged some of them in a different way. The creative industries, for a long time dominated by few major players, were at first largely resistant to the entrance of new, low-level competition. However, a different kind of competitor arrived in the form of illegal online distribution of content. To understand the ongoing war between those channels, it is useful to put it in the perspective of online services, their characteristics and how they were tapped by both the pirate and official channels over the past 20 years. The following Chapter presents an overview of the disruption in creative industries, with a focus on power shifts occurring with innovations in these markets.

Chapter II: Creative industries and the competition with piracy

As outlined in the previous chapter, many of the firms and companies of the pre-digital era have been toppled by the new, large players who managed to quickly tap into the power of the free, instant and perfect. These disruptions often came in the form of tech start-ups with innovative ideas or companies who invested in developing new technologies and platforms. However, for the major players of the creative industries, the initial disruption came from a different direction, effectively giving them a push to new distribution models – already proposed by the new entrants.

For many years, the music industry majors have been consolidating power – contracting artists, overseeing production and distribution as well as promotion. In a sense they were gatekeepers to the music market and they only chose those artists who they deemed promising enough. A new entrant to the market – even with a promising technology – would still lack access to most of the tools available to the majors and – most importantly – to the copyrighted music content that they managed. At worst, the new technology would remain unnoticed. At best, it would be bought by one of the companies in power. However, the labels were reluctant to invest in the new business models. Indeed, they have been in the same game for tens of years and saw no reason to change their approach. Thus, when a German group of researchers invented a new compression system for music files, they were not interested in incorporating it in their ongoing strategy.

The group of scientists lead by Karlheinz Brandenburg worked on the file format in hope to reduce the size of music files so much that they could be more easily shared over cable and easily stored in a digital form.¹⁴ The team of researchers strongly believed that file compression might introduce the new standards for music listening, as well as facilitate new channels for music distribution. They partially based their hopes on the rapid expansion of the technology, believing that it will soon allow for music to be delivered in real time, over long distances. However, their ideas were met with scepticism both from experts and the music distributors who preferred not to engage in the new technology.¹⁵ The team's efforts resulted in the creation of the MP3 format. However, with no interest from the labels and no visible ways for monetizing it, they decided to publish and share their encoding software, and afterwards the first MP3 player (WinPlay3). Where music companies failed to see allure, the listeners saw an opportunity, beginning the era of music file-sharing.

Of course, the so-called *piracy* has been around for long before the MP3 format existed. In fact, the first usage of the word “piracy” in the context of unauthorised copying can be dated to as far as late XVII century. Johns (2010) notes that some occasional and unrelated uses can be found in early 1600s, but that the second half of the century saw a proliferation of the term in England. As he shows, some dictionaries of that time included this new definition of “pirate”: “*one who unjustly prints another person's copy.*” Johns (2010) also highlights a case from 1730s, when ‘to pirate’ was used as a verb: “*to downright pyrate him (as Booksellers call it)*”.¹⁶ The term then spread to other European countries and across the world and has been used throughout history in the context of unauthorised copying. Before internet access spread, piracy referred mostly to unauthorised

¹⁴ This can be achieved by operations such as, for example, cutting out the sound frequencies not hearable by a human ear.

¹⁵ Marx et al. (2014) shows that it is indeed a common occurrence that industry entrants compete with the incumbents at the start, while incumbents wait to see which innovation is actually promising and only then partner with the entrants or even buy them out.

¹⁶ The citations provided by Johns (2010) come from Buchanan (1757) and Kennedy (1739).

analogue copies being sold e.g. on the streets. In some of the less developed countries, this is still the main form of piracy, though the illicit copies¹⁷ have also made their way to online vendors.

The XX century put the first automated copying tools in the hands of everyday consumers. As home equipment became able to record music and produce copies, the industry saw the rise of unauthorised competition from common consumers. These devices included for example tape recorders and later CD and DVD burners. The latter allowed to easily reproduce both music albums and movies and resell them at a marginal cost. However, it was the internet and the digitalisation that brought this challenge to full speed. As no legal contender was able to enter the majors-dominated market with technology-powered innovation, the disruption found its way through the illegal channels. It did so by tapping into the economics of free, instant and perfect, as well as leveraging many of the advantages of platforms listed in Chapter I.

This Chapter overviews the history of traditional creative industries in the XXI century, the entrance of digital intermediaries as well as the competition from piracy. As piracy is a challenge specific to creative industries, its role in the digital disruption is a major factor that goes beyond the trends described in Chapter I, although some of its characteristics are rooted in the previously described economics of digitisation. Chapter II provides an overview of this phenomenon as a background for analogous analysis for the comic book industry in Chapter IV. Notably, Chapter II focuses on explaining the changing competition in terms of the processes described in Chapter I. Chapter III provides a rigorous review of empirical literature on the effects of piracy.

Note 3. This Chapter is largely based on information from books by Johns (2010), Smith and Telang (2016a), Witt (2015), or from publicly available sources like press articles and Wikipedia. Citations to specific works are provided when necessary. The information is provided within the context of the issues discussed in Chapter I, to deliver a comprehensive overview of the changes that occurred in the largest creative industries in the XXI century. However, there is no globally universal history of piracy and how it competes with the legal distribution. In many countries around the world – especially the developing countries – content piracy continues to occur via physical exchanges. In others, the described processes happened to a smaller or larger extent. In the following sections, my focus is on more developed economies where both legal and illegal channels of distribution have become (or are quickly becoming) predominantly online in nature. While many of the described processes actually overlapped, I discuss them separately in a simplified timeline, for clarity. Finally, the whole industry market is abundant in many platforms and competing services distributing content. For brevity, the following sections will focus on the examples of companies with high market shares – thus, those effectively driving the changes across the spectrum.

¹⁷ Piracy is often understood as an illegal behaviour and copyright infringement. However, the actual law regulations regarding content distribution vary across countries. For example, while sharing of copyrighted content is typically outlawed, some countries are more permissible in regards to downloading or consuming the already available content. In Poland, the fair use allows to copy publicly available content if the intended use is non-commercial and does not include public sharing. However, fair use allows for further sharing with relatives and close friends, as well as sharing for educational purposes (e.g. teaching). Similar laws on personal/private use copying apply in, among others: Czech Republic and Switzerland, and applied in Netherlands up until 2014. Still, the personal use does not cover software and video games (that are legally considered as software) as these kind of products require the users to make licence agreements. In these cases, unauthorised usage constitutes a license breach. Also, some techniques of file-sharing like P2P networks (e.g. torrent) make it difficult to download without sharing, even if the user's intentions are only those of downloading. The legality of consumption might also be different in the context of unauthorised streaming sources and even this might be affected by the viewer's supposed awareness of the source illegality.

II.1. Pre-Napster era

In the pre-internet era, the legal supplier had an advantage over the illegal in most possible aspects. The economics of scale (basically the access to huge factories, mass production, distribution channels, etc.) allowed them to produce many copies with relatively low costs. Moreover, in the mass production process the copies were made from the same master copy, ensuring that all of the distributed items were of the exact same quality. The legal supplier also distributed their content through numerous large stores, allowing them to provide a relatively large catalogue of all the content that was most relevant at a given time. The illegal provider, on the other hand, had to deal with a time-consuming copying process using low scale home equipment. In the case of the analogue-era tape recorders, this process often entailed a quality loss for the copy. The pirate supplier also could not open a large shop, often having to fit their entire supply in the trunk of a car or a street stand. Finally, the pirate's catalogue was limited to what they could get their hands on. It thus seems that the main advantage of the illegal sellers of that time was to charge a lower price.

On rare occasions, the illegal suppliers could get ahead of the authorised distribution. This typically happened if they had factory access or access to promotional copies. For example, many films are first released as screeners and delivered to reviewers for early ratings – in advance of the official market release. For another example, a new music album release has to be preceded by long preparations. The master version of the record had to be delivered to a manufacturing plant. It would then take some time before all the copies for the US (or global) market were prepared. It would take further time to distribute them among specific retail stores before the day of the premiere. Along this process, many of the copies would be discarded as faulty or broken, making it close to impossible to account for each of them. Thus, it was possible for, e.g. the record manufacturing workers, to lift one of the copies and to later start distributing it even before the intended release date. In such cases, the unofficial provider had a large advantage over the legal retailer, as the latter did not even offer the content at the time.

Digital formats and computers upped the possibilities of illegal sellers to some extent. Personal computers, along with CD and DVD burners, allowed the users to drastically lower the time needed to create a copy and made it possible to create perfect copies of the original content. As such it became possible to create many copies of new releases and provide a wider range of choice for the potential buyers. However, the physical distribution options were still limited for an illegal seller.

II.2. The P2P era

The advent of internet coupled with the rapidly growing penetration of electronic devices suddenly allowed the illegal distributors to compete in areas where they were previously heavily outmatched. For one, the internet allowed them to organise themselves into groups of people from different parts of the world with a shared access to the same stock of ripped content. At first, this greatly enhanced the catalogue of the illegal sellers and allowed them to take orders for specific titles and sell them using the physical carriers. It became enough for one person in any part of the world to gain access to an original release (e.g. ahead of the release date) for all connected distributors to be able to resell it on the streets. Some release groups made it a point of being the earliest leakers of content – competing with other release groups for the fame of being the most efficient group. In some cases, the groups themselves would wait with the unofficial release so as not to draw attention to specific

leakers with direct access to the manufactured copies. In the meantime, the copies would circulate around private online networks with access restricted to the chosen few. Later, as more people became connected to the internet, the internet speed increased and lower sized digital formats were introduced, the distribution began to shift from physical to purely digital transactions conducted over the internet. The music industry was the first to take the hit, as MP3 files were small in size and relaxed many of the constraints typical for CD albums.

The famous case of Napster is often referred to as a turning point for the cultural industries (and not only because the first incarnation of Napster actually operated at the turn of the millennium – in the period of 1998-2002). The first sharing sites offered direct links to MP3 files hosted on their servers. These, however, were often broken and generally thought of as unreliable. Things changed with the introduction of the music platform Napster. In the beginning of its days, Napster offered the possibility of unsupervised peer-to-peer (P2P) file-sharing of audio files (MP3 and later WMA), which was the first time that an unauthorised digital market became an organised competition for the traditional brick and mortar sales of the XX century.

The Napster model constituted a challenge for the legal distributors in several key aspects. First, it relied on the economics of free, perfect and instant. It allowed for quick exchange of music files, which covered both low and high quality copies of the original tracks. The files did not take up any physical space and many could be stored on hard drives. The music could also be distributed across large distances and no costs were involved – each consumer received their own copy.

Napster was built around a P2P model (it is also considered one of the pioneers of this model), making it effectively a music distribution platform. Napster itself did not hold any of the distributed files. Those, instead, were stored on the computers of Napster users who chose to share specific folders and files that they had. Another user could then use the Napster's search engine to find a matching user with the sought content and download it directly from them (the transfers effectively occurred between the two users). As such, Napster benefitted from network effects – more users entailed more available music and a higher number of possible matches for downloads. The options grew quickly, as access was open and Napster did not oversee what audio files were shared between the users. At its peak in 2001, Napster reportedly had more than 26 million users. As the available music increased in Napster, it also held a very large catalogue, arguably aggregating more music than any brick and mortar store was able to provide on its own at a given time.

Another key feature of Napster and digital music distribution was that it unbundled songs. The legal options in the form of music albums were constrained by their physical carriers. The music market was dominated by long play formats that typically used as much of the available space as possible. As such, the music albums consisted of approximately 10 songs, as releasing fewer songs on separate CDs would be highly inefficient in terms of costs. However, music file-sharing essentially meant that the consumer no longer had to purchase the whole album if they only were interested in few songs.

Thus, Napster was essentially built around most of the disruptive platform characteristics cited in Chapter I, while the music industry incorporated almost none of the digital advantages. Following Napster's growth in popularity, the previously prospering music industry took a dive in revenues, sparking numerous studies on how much of it could be attributed to file-sharing (see Chapter III).

As a file-sharing service, Napster met its end in 2002 but was soon replaced by other file-sharing services. The end to Napster came with a lawsuit from the likes of Metallica and Dr Dre who were later joined by a group of record companies (A&M Records, Inc. v. Napster, Inc.). The lost lawsuit led Napster to bankruptcy, but this did not mark the end of digital piracy. On the contrary, new file-sharing platforms took Napster's place, allowing full flexibility on the types of content that could be shared. Some of the notable examples included KaZaa, Limewire, eMule and eventually BitTorrent that took over in the unauthorised file-sharing landscape and continues to be the most popular protocol in that regard. In 2004, BitTorrent was responsible for app. 25% of internet traffic, with app. 32% attributable to eDonkey and 14% to other file-sharing networks (Ernesto, 2006). By 2008, BitTorrent outpaced eDonkey in all parts of the world (Schulze and Mochalski, 2009).

Notably, the later file-sharing services like BitTorrent updated the P2P approach started by Napster to better leverage network effects. The new protocols operate by dividing any file into numerous smaller chunks that can be simultaneously downloaded from all users who share them from their computers. First, this enhances the speed of the process by creating lower upload burden on each of the machines. Moreover, this kind of approach provides more stable speeds as it does not rely on single sharers that can vary in their upload speeds. Second, this allows matching even with users who have not yet downloaded the full content – as long as they themselves have some chunks of the files that they can exchange. As such, these protocols enhanced the speed of file-sharing of larger files, including HD movies or video games and software. These advances were supported by developments in file compression and the rapidly increasing internet speed.¹⁸

As file-sharing services allowed to exchange any digital content, the market aggregation effects became stronger. The BitTorrent platform allowed to access all kinds of content through one user interface. The lack of restrictions on types of files meant that all creative industries were now facing the competition from a zero cost unauthorised distribution relying on platform economics. This market aggregation as the direct effect of network effects, as the number of users translated into the availability of content (and also into how easy it was to find and how fast to download specific titles).

After the short-lived victory against Napster, the creative industries started actively fighting online file-sharing. Some of their efforts included branding the pirates as thieves, suing file-sharing services or specific file-sharers, and lobbying for special protection laws aimed at reducing the traffic going to piracy websites, as well as reducing the ad revenue streams in services facilitating file-sharing. Some more controversial techniques included purposeful pollution of the content available through P2P networks. These acts (further discussed in Section III.4.) created additional costs for unauthorised file-sharing (e.g. procedural, moral and risk costs). These efforts were some of the few tools left available to the industry representatives, as symmetric tools were not available to their illegal competition.

Notably, despite many evidence to harmful effects of online file-sharing to the music industry, some studies also highlighted the complementarity of piracy with specific channels. For one, downloaded MP3 files served as complements to the MP3 players, with positive effects on the sales of e.g. iPods. Two, piracy also carries positive effects for live performances, which are essentially a different good

¹⁸ For context on the speed of these changes, consider that at the time of Napster, downloading a 5Mb audio file could take at least minutes (assuming stable connection), while at the time of this writing (2018), one can stream Ultra HD movies that take gigabytes of space – in real time.

than pre-recorded songs, but rely on artist popularity and fans familiarity with their music. The studies highlighting these effects are further mentioned in Chapter III.

II.3. The digital intermediaries

iTunes store became the first major legal digital distributor for the creative industries. Apple's service started in 2003, offering a large catalogue of music in the digital format. The catalogue was later extended to cover TV shows, movies, apps and e-books. Thus, iTunes aggregated not only the music, but also other types of content. Having their hands forced by the unauthorised distribution, the music industry majors began to enter digital distribution, by selling official releases through the online retailer. In case of music, this meant embracing the unbundling introduced by the MP3 format, greatly undercutting the so far dominating music album sales. As producing digital copies of songs is essentially costless, iTunes proposed a low price for any song (around one dollar). It also worked to reach agreements with as many producers as possible, to aggregate as much music as possible in one music store. Moreover, iTunes included app management for iOS devices, media playing capabilities, playlist creation, CD ripping and numerous other utilities, making it a comprehensive service and each of its additional services complementary to the distribution. However, it took time for iTunes to improve the quality of the sold music (to 256 kbps in 2009), making the quality options available in P2P networks wider for some time.

In 2005, YouTube – a video-streaming platform – entered the market. A year later it was acquired by Google and now remains its subsidiary. YouTube allows its users to upload videos and to share and comment on it with other people. In its first years, YouTube sparked controversies as much of the uploaded content constituted copyright infringement. Many people, for example, uploaded full music album as video files (despite the videos being essentially single album cover photos accompanied by music). This degree of openness made YouTube the subject of several lawsuits – see e.g. BBC News (2007) or Zampano and Moloney (2008). These, in turn, forced the platform to develop new tools for copyright owners – at first, by allowing them to easily takedown infringing content, later to include revenue-generating advertisements in the found videos. Currently, YouTube is also the dominant platform hosting promotional material such as music videos and movie trailers.

The second half of the 2000s saw the emergence of numerous online retail services that further disrupted the incumbent business models in creative industries. In 2006, a previous CEO of µTorrent (a software client for torrent file-sharing) – Daniel Ek – co-founded Spotify. The new service allowed for streaming music in real-time, without having to download files. In 2007, Netflix (previously a DVD rental company) introduced streaming services for movies and TV shows and also became a producer on its own. Notably, the above-mentioned services were not the only ones with similar models of content distribution. Tidal and Deezer are two other examples of music distributors, just like Netflix faces the competition from Hulu, Amazon Prime, HBO Now¹⁹ and soon from Disney+.

These streaming services revolutionised the way music, TV shows and films were produced, distributed and consumed. They also effectively became largely successful challengers to the file-sharing model of distribution. Spotify no longer required from its users to manage a library of music files, or to store them on their devices. Instead it offered music as a service, that could be listened to on the go. As such, it managed to utilise the instant characteristics of digital goods to a degree even

¹⁹ Named HBO Go in some countries, including Poland, despite a different service named HBO Go offered in e.g. USA.

larger than iTunes and file-sharing. It also changed the model from pay-per-song to an ad-supported service with a no-ad premium subscription option. As such, Spotify was able to offer better access to music than file-sharing, at the same cost of 0, with ads that were safe²⁰ and with the ad revenue actually going to the artists (even if only in small part). Moreover, Spotify invested much effort into leveraging the data available on its own users.

This last development is essential to understanding the success of Spotify in curbing unauthorised consumption, as the latter has no equivalent tools. Spotify offers its unique services in exchange for the information the users reveal about themselves once they start listening to music. The service algorithms can then use this information to match the listeners with previously unknown artists who match their tastes, to increase user experience with the interface or to curate well-matched playlists for each individual. All these efforts create value to the service. However, file-sharing networks, illegal streaming services and many of their users operate outside of the law, making it essential that the users remain as anonymous as possible and that their behaviour is not tracked and recorded. As such, the illegal providers have no means of leveraging data in the way platforms and resellers do it.

Netflix proposed a similar approach to consumption as Spotify, but further disrupted the status quo by becoming the first online intermediary with self-produced content. As Spotify, Netflix put much effort in power consolidation and market aggregation, for some time becoming the only important digital streaming distributor of films and TV shows. For a flat monthly fee Netflix offered access to numerous films and shows, without the need for downloading them. Unlike Spotify, however, Netflix also started producing its own content that remains Netflix-exclusive. This marked a large change in traditional business models in the TV industry. Traditional TV shows have been constrained by available air times on TV, and available time slots forcing a specific runtime for episodes. Moreover, TV stations had limited knowledge on specific preferences of their viewers, and typically based their production decisions on intuition and appeal of a pilot episode. They also had to consider the available airtime and whether this airtime can be filled with, e.g., shows targeted to specific types of audiences (e.g. adult viewers). Netflix, on the other hand, could tell from their detailed user viewership data that there is an audience for a political drama starring Kevin Spacey and thus ordered a full season of House of Cards in one go (the pitch for the show was previously turned down by traditional TV stations). The producers had relative freedom on the show's format – they did not have to conform with specific runtimes, commercial breaks or one-week pauses between the episodes. Instead they could treat each episode as they saw most fit. When they were finished, the whole season of the show was released simultaneously to Netflix, becoming its flagship show for years to come. Netflix could further leverage their data to advertise their new shows to specific groups of users and to even differentiate the exact approach by subpopulations.²¹

Moreover, other creative industries also enter the digital era and with it come under threat from unauthorised use. Amazon shop became the go-to online store for e-books and released its own publishing options and reader device (Kindle). However, e-books are also widely accessible from file-sharing networks. Other industries start introducing digital formats: comic books, sports broadcasts,

²⁰ Many of the ads presented in file-sharing services are malicious and can infect the user's computer (see Section III.4.1.1.).

²¹ For example, different trailers for one show might be targeted to different users based on their preferences. House of Cards had one type of trailer targeted to users who liked films with strong female characters and another trailer to users who liked films with Kevin Spacey.

TV shows or even board games. Finally, the recent times saw the emergence of 3D printing – opening the door for unauthorised copying of any items despite their copyright-restricted shape and details.

The rise of the online intermediaries in creative industries diminished the appeal of file-sharing but also further disrupted the incumbent market leaders. The online resellers offered their infrastructure, know-how and expertise to creative industries to rival the unauthorised online distribution. Illegal streaming services also emerged, but they often lacked the infrastructure to host high-definition video streaming on-the-go, were riddled with potentially malicious adware, had poorer user experience and no means of collecting and leveraging detailed data on users. The rapid growth of the intermediaries made the labels dependent on the online distribution services, effectively locking them in a partnership. In a world shifting towards digital distribution, the producers who used to hold power over the distribution had no means of efficiently competing with the online reseller without the data and technology for own digital distribution. By 2018, video content was responsible for 58% of downstream internet traffic (Sandvine, 2018). By 2011, digital revenues have outpaced the physical revenues in the US music market (International Federation of the Phonographic Industry - IFPI, 2014), and the rest of the world is following in its footsteps.

At the same time, new services – accompanied by new tools – empowered the artists. Prior to that, the artists or writers typically had to put an effort to get signed on with a good label. This is because they themselves could not afford promotion, production or distribution. These were conducted by the big companies who had more negotiation power. The big companies decided who to invest in and who to put on the shelves of brick and mortar stores, with the decisions also dictated by the limited space in the store storages and shelves. This also led to exposure of the big artists and the non-existence of the small ones. Digitalisation and technological progress allowed artists to own high-quality software and hardware on their own computers, making them less financially dependent on the large players. Moreover, the internet provided the artists with promotional channels and tools including social media or YouTube. The production and distribution costs became negligible as per the economics of free, instant and perfect. Finally, distribution services were able to efficiently match consumers with the artists. This allowed the smaller artists to profit by reaching a small group of fans distributed globally – which was non-achievable before digitalisation. Digital catalogues also did not suffer from limited space, even for digital stores of physical goods that could now be stored *en masse* in storage rooms instead on shelves. Thus, the power and control of major labels decreased, paving the way for smaller entrants – or so-called ‘independents’.

II.4. Streaming wars and Piracy 3.0

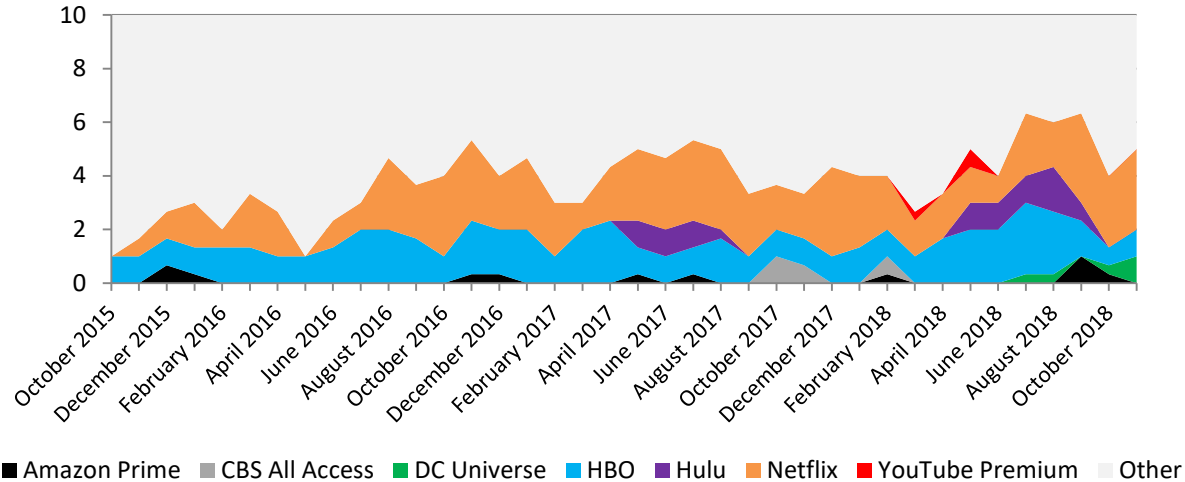
II.4.1. Streaming wars

The landscape of the digital market is continuously changing and the movie/TV streaming services are the best example of it. As Netflix started its streaming service, it had no real competition in this market. Meanwhile, HBO offered only a premium cable service and for a long time after having introduced a streaming service, it still required a cable subscription. As such, Netflix quickly licenced content from a variety of producers, expanding on its base of available products. It helped that Netflix produced its own content, which was Netflix-exclusive. Netflix’s head start gave it the ability to accumulate data quickly and to leverage it for its expansion. Originally a DVD sales and rental company, Netflix started media streaming in 2007 and by May 2018 reached the market value of

Comcast and Disney (Kim, 2018), with 130 million subscribers by July 2018 (and growing), as well as being responsible for app. 15% of all downstream internet traffic (Sandvine, 2018).

However, despite its rapid success at ensuring the position of a dominant distribution channel for much of the TV programming, Netflix is slowly being forced into restructuring. As streaming popularity grew traditional TV networks and media companies became unhappy with their existing arrangements with Netflix. Their relationship in Netflix forced them to accept the terms laid out by the streaming giant, while Netflix retained the access to all the data collected in the process of content distribution. As such, other content producers began the gradual roll out of their own streaming services. Some of those belonged to the incumbent TV networks, like Hulu – established jointly by Disney, 21st Century Fox, Comcast and AT&T; HBO Now – the standalone streaming service with HBO content; or CBS All Access – the streaming service of CBS. Others were created by new entrants to TV programming like Amazon Prime, DC Universe or YouTube Premium – with Disney set to release its own service in 2019. Thus, the incumbent TV networks with own new services are gradually withdrawing their content from Netflix in order to stream them exclusively. According to Ted Sarandos – the chief content officer at Netflix – Netflix has been expecting this and is instead shifting its focus to own original, exclusive programming. In fact, in 2016 Netflix has revealed a target of an even split of original and licensed programming, with the share of original content potentially getting even larger according to an answer in 2018 (Rodriguez, 2018b). At the beginning of 2018, Netflix was reportedly set to spend from \$7.5 to \$8 billion on original content (Munson, 2018).

Figure 7. Ten most popular TV shows in IMDb, by original network.



Note: Each month reflects averages from up to three date points within a month (fewer in cases when only one or two date points were accessible). Some of the shows in the "Other" category have been subsequently dropped by their original networks but picked up for new seasons by the streaming services (e.g. The Expanse by Amazon, Designated Survivor or La Casa de Papel by Netflix) or got included in the most popular shows charts because of additional interest generated by a sequel show from Netflix (e.g. Gilmore Girls, Full House). Moreover, some of the shows are internationally distributed by other distributors (e.g. Star Trek: Discovery by CBS All Access and Titans by DC Universe are internationally distributed by Netflix, despite being available exclusively on their original networks domestically).

Source: Own elaboration based on data from archived IMDb charts (www.imdb.com/chart/tvmeter), accessed via the Wayback Machine (archive.org/web).

Moreover, Netflix is no longer the only service with its own exclusive content. The new streaming companies – both those of the previous TV networks and those of the new entrants – are

increasingly committing to releasing original programming, available only at their service. In 2017, Amazon reportedly spent \$4.5 billion on its programming, while Hulu spent \$2.5 billion and these numbers are on the increase (Munson, 2018). In 2015, HBO – the owner of the most popular ongoing show (Game of Thrones) – released its own streaming service and new entrants are typically launching theirs with a simultaneous release of flagship exclusive content (e.g. Star Trek: Discovery at CBS All Access; Titans at DC Universe). The things are about to change further with the launch of the Disney service (Disney+) and the exclusive Star Wars series. Moreover, Apple is said to enter the market, with the plan of spending \$4.2 billion on original content by 2022 (Wallenstein, 2017).

These advents mean, that the top most popular shows at any given moment are split among an increasing number of different subscription-based services. Moreover, these changes are occurring rapidly. According to IMDb and the interactions of its users, TV shows exclusive to three different networks have made it to the top 10 most popular shows between October and December 2015, with no more than 3 network-exclusive shows in the top 10 at any month (see Figure 7). However, in 2018, seven different networks had their exclusive programming enter the top 10, with the share in some months exceeding the share of shows from traditional TV networks. In terms of factors described in Chapter I, this implies increasing market disaggregation for the top programming. Indeed, TV viewers would have to pay increasing amounts of money to subscription services to keep up with the top 10 TV shows in any given month.

II.4.2. Piracy 3.0

As the streaming competition has been growing, a group of developers (Xbox Media Center) started working on an open-source alternative to the Xbox media player. The open-source nature of the project contributed to its quick development, as a whole community could work on the product and improve it (for a full story on the emergence of Kodi and TV boxes see Barrett, 2017). This uncontrolled openness is also what eventually lead to its downfall.

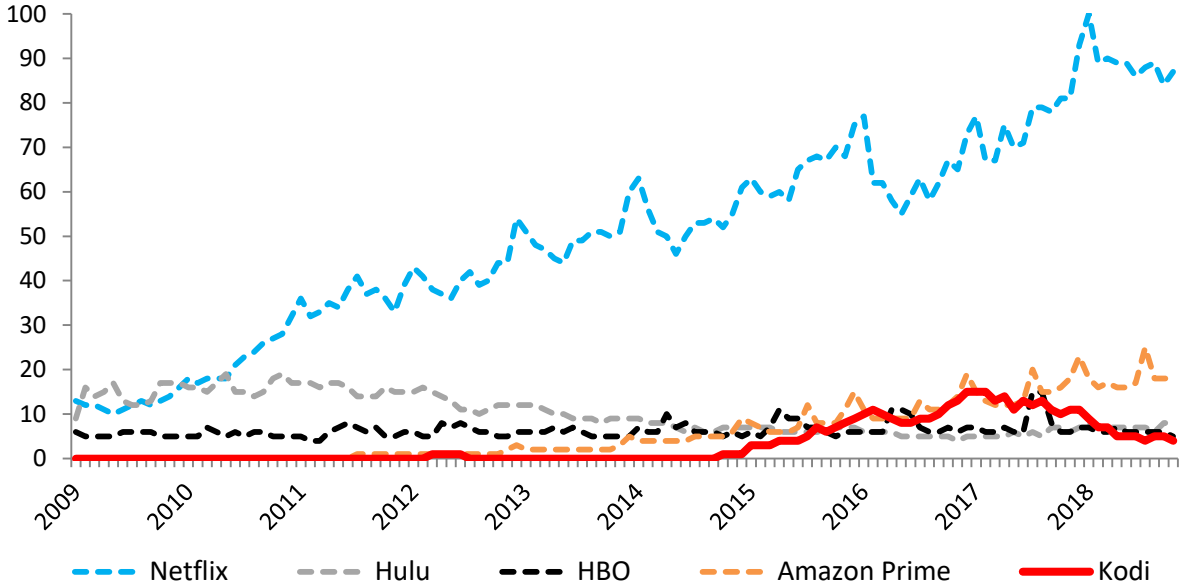
The original developers strived to keep their product away from legal misdoing. The software was designed as a helpful utility, with add-ons integrating support for various applications (e.g. Dropbox). However, many of the contributors started creating plugins that would allow the software to stream videos from unauthorised sources (like hosted files or pirate streaming services). By 2012, XBMC decided to distance itself from the controversial community-driven plugins and banned such efforts from their forum. A distinct group of developers then formed the XBMC Hub – an open place for further add-on development. By 2014, XBMC decided to rebrand themselves as Kodi in an effort to further distance themselves from the growing XBMC Hub.²²

The revolution started as the modified versions of the player entered the market. As a piece of software, Kodi could be installed on a small device (often a so-called box) and sold as a handy utility. However, at the same time anyone could use the piracy-enabling versions of the software to start their own sales of boxes with the tool. While Kodi had its name restricted for their own, perfectly legal product, the modified versions usually circulated under the Kodi name. It is important at this point to note that the piracy-enabling boxes were created as to make access to content as easy as possible. Essentially, with some plugins it was enough to have a box and to enter the name of the movie or TV show that the user would like to watch – then press “play”. At its peak moment in the

²² XBMC Hub renamed itself as TV Addons.

beginning of 2017, the name “Kodi” became more popular in Google searches than Hulu, HBO or Amazon Prime (see Figure 8). In 2017, the president and managing director of MPAA, Stan McCoy labelled illegal streaming devices as “Piracy 3.0”, with P2P file-sharing constituting Piracy 1.0 and illegal streaming services constituting Piracy 2.0 (Ernesto, 2017a). Sandvine (2017a) reported that app. 8.8% of North American households had a Kodi device, with almost 70% of these devices accessing unlicensed content. These shares are even more impressive in some of the Asian countries, where “ISDs” (Illicit Streaming Devices) are used by up to 45% of the online consumers (in Thailand, with 24% in Hong Kong, 28% in Philippines, 34% in Taiwan; Asia Video Industry Association, 2018). Importantly, many of these ISD owners state that they have cancelled their subscriptions to legal services (although it is not clear if the ISDs were the direct reason).

Figure 8. The rise and fall of “Kodi” Google search popularity, with popularity of streaming services as comparison.



Note: own elaboration based on Google Trends data for the period 2009-2018.

At first, Piracy 3.0 proved exceptionally difficult to fight and it was also unclear who should be fought if anyone. The original Kodi developers made it clear from the start, that they did not want to infringe on any rights. The subsequent developers often did not seek to make money of their plugins. Other potential infringers would install the piracy-enabling versions to boxes and begin their distribution, but it was the consumers who would decide to buy them. Even then, however, owning a piracy-enabling box did not necessarily mean that it was used for accessing illegal channels. A few attempts by specific networks were made at suing specific sellers (e.g. SkyTV against My Box and Krish Reddy – Andy, 2018a), but these efforts only dealt with a fraction of the problem.

In an unprecedented manner, the TV and movie industries took to more severe measures to eliminate the threat. Thirty global and major entertainment companies – including both older companies and the new streaming services²³ – formed the Alliance for Creativity and Entertainment (ACE) in the June of 2017 to jointly fight copyright infringement. The add-on developers slowly began

²³ As of November 2018, the list of members consists of: Amazon, AMC Networks, BBC Worldwide, Bell Media, Canal+ Group, CBS Corporation, Constantin Film, Foxtel, Grupo Globo, HBO, Hulu, Lionsgate, MGM, Millennium Media, NBCUniversal, Netflix, Paramount Pictures, SF Studios, Sky, Sony Pictures, Star, Studio Babelsberg, STX Entertainment, Telemundo, Televisa, 20th Century Fox, Univision Communications Inc., Village Roadshow, Disney and Warner Bros.

to disappear from the community websites, with some sources citing agreements demanding them to cease their work on the piracy-enabling software and not to disclose any of the details of the said agreements (Andy, 2018b, 2018c). The Alliance also took the fight to the platforms allowing for the distribution of the plugins, forcing them to shut down (Andy, 2018c). In 2018, Google added the word “Kodi” to its auto-complete filters, directly reducing the traffic related to both the legal Kodi and the illegal boxes (Ernesto, 2018a). Also in 2018, Facebook decided to ban selling of any Kodi-related streaming devices altogether (previously the ban extended only to the piracy-enabling devices; Ernesto, 2018b). Effectively, the “Kodi” searches fell after 2017 and slowly returned to their pre-growth levels, with Piracy 3.0 partially fought off – largely at the cost of the initial, lawful developers.

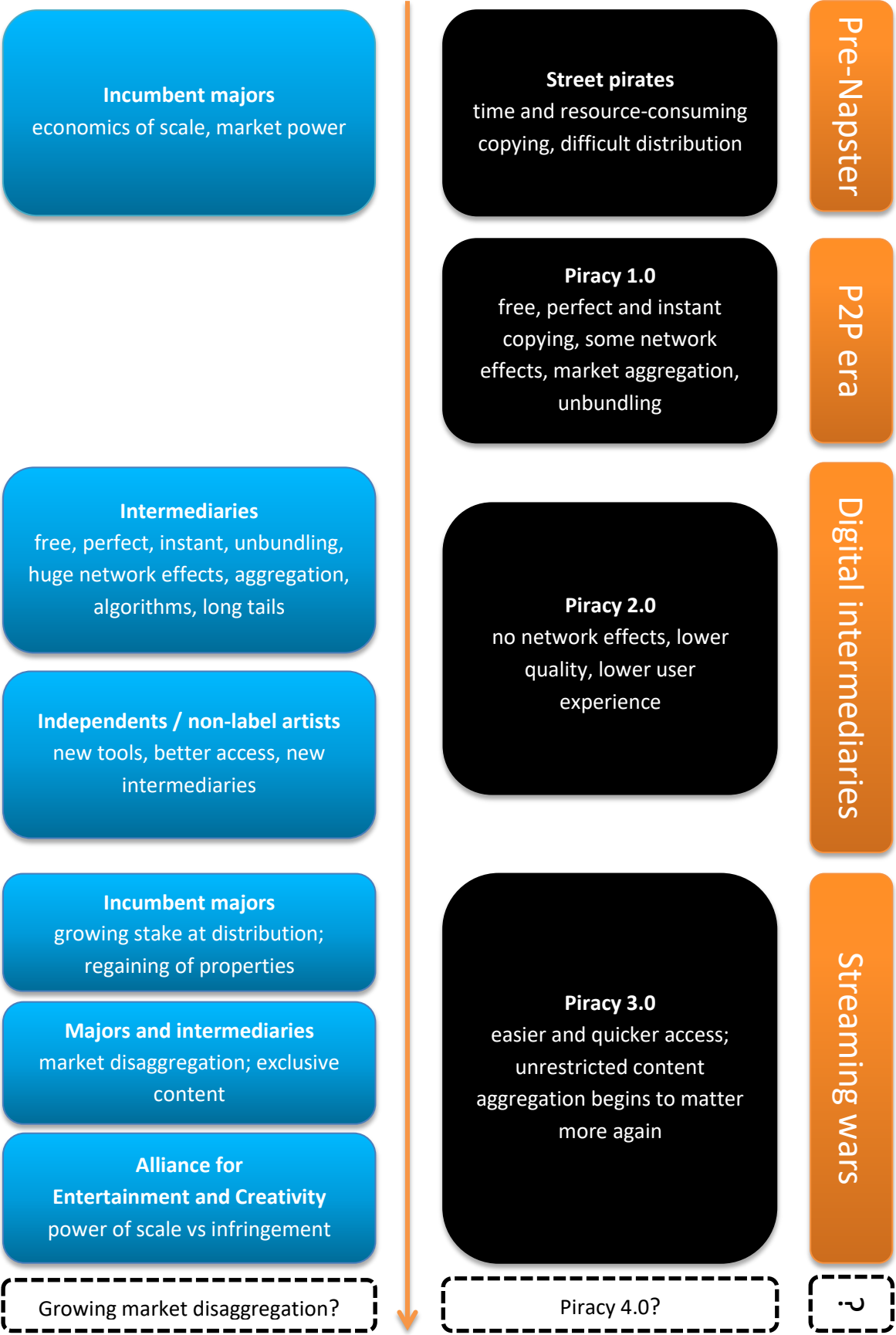
II.5. Creative industries and the competition with piracy – summary

The past 20 years brought numerous changes to the business models in creative industries. However, the digital disruption took a different path than for other industries, as creative industries were challenged mainly by the unauthorised distribution. As such, the major entertainment companies were forced to embrace the new models of distribution, mainly by licensing their content to online intermediaries. These intermediaries, in turn, grew and eventually became major players of their own. Meanwhile, the unauthorised sources also evolved, challenging the legal providers with the growing ease of accessing content. On the one hand, this made the entertainment companies work together to fight the illegal distribution. On the other, the streaming services are increasingly competing against each other, effectively increasing the difficulty of consuming the top content at any given time. Figure 9 presents a simplified timeframe of the competition between the legal and illegal providers, as well as the changes within the creative industries themselves.

The most recent chapter in this story – concerning Kodi and the illicit streaming devices – carries two important implications. First is that the digital market is still ongoing changes and that it is difficult to predict what exactly will happen in the near future. Second is that the competition between the legal services and piracy is still ongoing, with the possibility of new forms of illegal access options eventually threatening the incumbent providers again. With a growing market disaggregation in the top TV programming, the pirate providers regain the advantage of offering most of the content at one place. This is especially highlighted by the fact, that the P2P torrent traffic has been observed to increase again after a few years of continuous decline, with some observers citing the streaming wars as the main cause (e.g. Bode, 2018a).

These advents together highlight the need for continuous monitoring and research regarding the economics of the competition between the changing entertainment companies and the changing unauthorised distribution. It is difficult to predict how the market will evolve in the next 10 years, as the changes occur very dynamically (e.g. Spotify and Netflix streaming services started their operating approximately 10 years as of this writing). However, analysing the specificity of these ongoing changes helps shed light on what processes drive these changes, and might help develop successful pathways for the industries that have entered digitalisation only more recently.

Figure 9. Simplified timeframe of the competition between piracy and legal channels in digital era.



Source: own elaboration based on concepts described in Chapter II.

Chapter III: Empirical evidence on piracy

Despite a vibrant debate around the topic of piracy, many of its dimensions and actual effects on creative industries are not yet fully understood or the knowledge is outdated. The debate around the topic is polarized, with some equating piracy to theft, and others claiming that it is neutral or even complementary to legal sales. Many of the discussants avoid the existing empirical literature on piracy or cherry pick the studies that support their views. However, even despite that, the empirical literature does not fully cover the issue and all of its implications. Several factors contribute to this knowledge gap. First, the issue itself is difficult to study – it is difficult to find reliable data, as many pirates put effort into staying anonymous while accessing pirate channels. At the same time, self-reported data can be biased as in most cases of self-reporting on controversial and/or unlawful behaviour. Two, it is difficult to assess the actual effects of piracy on legal sales, as the demand for both channels is highly correlated. On the consumer side, heavy culture consumers are likely to both pirate and purchase more content than regular consumers. On the seller side, a high-quality product will likely get purchased more often and pirated more often. Both these correlations do not imply that piracy has a positive effect on sales – rather that unobserved variables tend to influence the demand for both channels in the same direction. Third, the digital markets are in continuous flux, with changes in technical capabilities, algorithms, business ideas, and regulations driving changes for both channels. Thus, the actual effects and characteristics of piracy continue to shift – highlighting the need for continuous research on the topic. Finally, research has covered only a small fraction of industries facing digitalisation, while some industries are still only beginning to face piracy.

As the exact influence of piracy on creative industries remains disputed and is often shown to be dependent on other factors, this chapter focuses on discussing what is currently known about piracy from empirical research. It also provides background and reference point to the new analysis of the effects of piracy on the comic book market presented in Chapter IV.

III.1. Prevalence of piracy

Piracy has become an integral part of cultural participation around the world and is far from being eliminated. MUSO (2017) reported that overall piracy increased slightly between 2016 and 2017, mainly for TV content and music (with a small decrease for films). The report mentions that in 2017 there were more than 300 billion visits to piracy sites. Ende et al. (2018) found that in six out of seven European countries the number of pirates decreased between 2014 and 2017 (Germany was the exception), though the volumes of pirated content among the pirates actually increased. NetNames (2013) found a rapid increase in infringing bandwidth between 2010 and 2013. They estimate that in January 2013, 432 million unique internet users sought infringing content. Notably, according to some reports, countries like Spain (GfK, 2017; 2018) or Australia (TNS Australia, 2016) noted small decreases in piracy in recent years. However, even in such countries, the shares of pirates among consumers of specific types of content range from app. 20 to 40%, while across 13 countries studied by Ende et al. (2018) the shares of pirates in 2017 ranged from 23% in Japan, 29% in Germany and 36% in the UK to as much as 67% in Brazil, 73% in Thailand and 84% in Indonesia. These numbers, together with the academic literature on sales displacement caused by piracy, show that the creative industries' struggle with piracy is far from over.

Indeed, industry observers are increasingly pointing out that the ongoing streaming wars are likely to drive consumers back to piracy. As illustrated in Chapter II, Film/TV industries are increasingly introducing their own platforms with high-budget and quality exclusive content. With the torrent traffic for films and TV series having increased for the first time after a continuous decline, some industry specialists have attributed it to the increasing exclusivity of various titles and their reduced international accessibility (Cullen, 2018). Notably, music streaming services have also begun competing in terms of exclusive deals with artists and the observers also note the likelihood of listeners to revert to piracy (Luckerson, 2016).

III.2. Confusion around “piracy”

The issue of piracy and its numerous facets stirs controversy around the world. However, the views on the issue tend to differ greatly both across stakeholders and in terms of legality across countries.

Piracy might refer to different aspects of the unauthorised distribution, sometimes leading to confusion if not defined properly. Indeed, the term by itself may refer to the act of sharing, the act of downloading, the act of uploading, the act of streaming, the act of file-hosting or the act of file exchanging (e.g. simultaneous sharing and downloading via torrents). Notably, all these acts might involve different sets of skills and effort, as well as may reflect differing types of motivation. Similarly, the term *pirate* might refer to a person who does any one or all of these acts in general. This difference in interpretations is also visible across research studies of piracy. For example, Bustinza et al. (2013) use the term “piracy” interchangeably with “file-sharing”, but their study actually measures only the downloading behaviour. Similarly, Zentner (2006) writes about file-sharing and P2P activity but uses data on downloads. Adermon and Liang (2014) write about *piracy* and understand it as file-sharing. However, their data uses changes in internet traffic induced by a law change. There are numerous studies that use the definitions in similar ways. Some studies, however, make further distinctions. For example, Ende et al. (2015) distinguish between illegal downloads and illegal streaming, even though Ende et al. (2018) combine the two together. Notably, Ende et al. (2015) define *digital piracy* as online copyright infringement, even though some of the countries in their sample consider downloading and streaming as fair use.

The word “piracy” itself seems to evoke contrasting images to the various stakeholders. For example, some organisations condemn the use of the word, highlighting that the original meaning was that of armed sea robbery (still common in some parts of the world). This, indeed, is in a stark difference to the online acts of culture consumers – especially if the acts are actually legal. In 2013, a file-hosting service Hotfile made a motion during its legal battle with the MPAA that the latter should not be allowed to use loaded words such as “piracy”, “theft” or “stealing” during the proceedings – even if their claims regarding infringement were found to be true (see Ernesto, 2013). On the other hand, many entities embrace the *pirate* label or even romanticise it as an expression of openness and freedom from rules. First, one of the most popular (or notorious) websites facilitating file-sharing is named The Pirate Bay. Second, several countries have Pirate Parties in their parliaments and there are Pirate Party representatives in the European Parliament as well. These parties typically support values such as copyright reforms, freedom of information or net neutrality and do so in legal ways. At the same time, they embrace the *piracy* emblem in their name and logo. Finally, most researchers make use of the broad term “piracy” in their studies. For example, of all the studies on the effects of

unauthorised consumption (or sharing) on sales, cited in this thesis (see Table 4, Table 5 and Table 6), 89% used the word “piracy” at least once in the manuscript, while 45% included it in their titles.

Moreover, the awareness of (il)legality of a particular source is not obvious as sometimes seemingly similar content providers can fall on two different sides of what is legally allowed. The users often do not realise what acts are allowed by the copyright law in their country. Many services rely on user-uploaded content and provide this as a justification to non-liability for the infringing content. For example, in the trial that led to its bankruptcy, Napster argued that its service might be used for legal purposes so it should not be punished for how it is abused by “some” – just like a VCR might be used to copy without authorisation, but is not deemed illegal (see Kaplan, 2000). This argument was not enough to save Napster, but history has shown that the verdicts might differ. For example, YouTube includes much infringing content uploaded directly to the platform, but is considered a legally operating service. Similarly, Facebook is not punished for the acts of its users.²⁴ Still, the shutdown of Megaupload (and simultaneously of the Megavideo), as well as the (unsuccessful) fight with the Pirate Bay highlight that the services are often held accountable.²⁵ Finally, the perception is further distorted by low social awareness of what the law actually permits. For example, a report in Poland found that most people either do not know what they are allowed to do in terms of copying content or they think that it is actually illegal (Danielewicz and Tarkowski, 2013).

Finally, there is a large disparity in how the effects of piracy are perceived by various stakeholders and it is rarely based in empirical research. On the one hand, industries often claim that piracy lowers creation, even though so far research studies have not found such an effect. Moreover, some of the industry organisations have famously likened piracy to stealing (e.g. the “*Piracy, it’s a crime*” campaign²⁶), thus linking it to existence of direct losses. On the other hand, the social norms around piracy are far from equalling it to stealing and consider the act of piracy as a deed with a very different ethical loading (Hardy et al., 2013; Green and Kugler, 2010). Moreover, some of the proponents of looser copyright laws seem to cherry pick the findings of no relationship of piracy with sales. For example, Julia Reda of the European Pirate Party uncovered the unpublished EU study report on the displacement rates caused by piracy. While circumstances of the report publication are controversial, the report’s main outcome was a lack of meaningful conclusions.²⁷ However, at her blog, Reda (2017) presented the lack of evidence as evidence of a lack of an effect, while also stating: “*this result is not unique, but consistent with previous studies*” (a statement clearly contradicted by evidence presented in Section III.3). Finally, the pirates are both more likely not to believe in the negative sides of piracy and more likely to believe in its positive sides (see Table 2, based on the HIIT data, that shows the beliefs of responders grouped by their frequency of using P2P). This includes, e.g., a strong belief that piracy generally increases sales of music (e.g. by popularisation of artists and promotion of their music). It also includes stronger beliefs among frequent pirates (rather than among non-frequent pirates and non-pirates) that their use of P2P increased rather than decreased their purchasing behaviour across different types of media (see Table 3).

²⁴ Importantly, at the time of this writing (2019-03-16), the European Commission is working on its Directive regarding the copyright in the digital single market, which makes platform owners liable for infringing content uploaded by their users.

²⁵ There are obviously many reasons why YouTube would be treated differently to, e.g., the Pirate Bay. Compliance with takedown requests and tools for monetisation of the streams by rights owners are two such reasons.

²⁶ See: https://en.wikipedia.org/wiki/You_Wouldn%27t_Steal_a_Car.

²⁷ Most of the conducted analyses provided coefficients with very large error margins. While the authors cannot exclude the result of a null displacement rate, in some cases they also cannot exclude the result of a 100% displacement rate. The only robust results of the report pertained to cinema ticket sales and were later published by Herz and Kiljański (2018).

Table 2. HIIT responders beliefs about the impacts of using P2P technology for file-sharing.

P2P frequency	The following statements relate to the usage of P2P file-sharing:							
	supports criminals	supports terrorists	damages artists	damages producers	allows me to learn new music	increases music sales	supports technology development	helps artists bypass record companies
	Disagree / Agree							
Never used	43% / 27%	56% / 11%	25% / 53%	26% / 53%	24% / 39%	38% / 27%	38% / 27%	39% / 24%
Once every six months or rarely	79% / 14%	90% / 3%	57% / 38%	52% / 43%	19% / 75%	31% / 56%	31% / 56%	40% / 45%
Once a month	90% / 6%	96% / 1%	65% / 31%	60% / 36%	12% / 86%	25% / 66%	25% / 66%	34% / 54%
Once every two weeks	92% / 4%	96% / 2%	67% / 31%	60% / 39%	8% / 90%	22% / 69%	22% / 69%	34% / 53%
Once a week	93% / 4%	98% / 0%	67% / 31%	55% / 43%	5% / 93%	20% / 71%	20% / 71%	34% / 55%
Several times each week	95% / 3%	97% / 0%	74% / 25%	63% / 35%	4% / 96%	17% / 74%	17% / 74%	29% / 58%
Every day	95% / 3%	98% / 1%	74% / 24%	65% / 33%	3% / 96%	13% / 81%	13% / 81%	29% / 61%

Note: the full wording for the questions was, respectively: *“By using P2P file-sharing sites I support criminal organizations”*; *“By using P2P file-sharing sites I support terrorist organizations”*; *“By using P2P file-sharing sites I may do damage to the artists”*; *“By using P2P file-sharing sites I may do damage to the producers (record companies, television companies)”*; *“Through P2P file-sharing sites I can get to know new artists and music”*; *“P2P file-sharing sites increase music sales”*; *“By using P2P file-sharing sites I can support technological development”*; *“By using P2P file-sharing sites I can help artists to bypass record companies”*. The responders had five options to choose from. The answers “Disagree” and “Somewhat disagree”, as well as “Agree” and “Somewhat agree” are aggregated to “Disagree” and “Agree”, respectively (a fifth option: “I don’t know” is not reported in the table but comprises the remaining responders).

Source: own calculations based on the HIIT data (Hietanen et al., 2007).

Table 3. HIIT responders beliefs about the impacts of using P2P for file-sharing on legal consumption.

P2P frequency	How P2P usage has impacted your usage of the following Medias?									
	TV programs	Digital download movies	Digital download music	DVD-movies via internet	CDs via Internet	DVD-movies from a store	CDs from a store	Cinema going	Renting of movies	portable media players
	Decreased / Increased									
Never used	13% / 7%	10% / 4%	15% / 3%	19% / 4%	22% / 1%	11% / 5%	19% / 9%	16% / 8%	7% / 9%	23% / 1%
Once every six months or rarely	12% / 7%	6% / 2%	12% / 5%	15% / 3%	22% / 6%	22% / 7%	23% / 12%	16% / 6%	15% / 8%	29% / 1%
Once a month	20% / 11%	6% / 5%	16% / 7%	22% / 5%	27% / 8%	27% / 12%	29% / 20%	22% / 9%	17% / 17%	44% / 3%
Once every two weeks	24% / 18%	9% / 2%	15% / 5%	27% / 4%	29% / 10%	34% / 12%	29% / 21%	26% / 9%	21% / 20%	51% / 1%
Once a week	28% / 27%	6% / 5%	13% / 8%	26% / 6%	31% / 10%	29% / 17%	27% / 23%	27% / 15%	17% / 26%	52% / 1%
Several times each week	35% / 29%	8% / 9%	10% / 9%	25% / 11%	27% / 12%	31% / 22%	26% / 27%	29% / 16%	14% / 32%	58% / 2%
Every day	41% / 33%	10% / 14%	9% / 15%	25% / 16%	23% / 18%	27% / 28%	22% / 32%	29% / 25%	13% / 39%	59% / 5%

Note: The responders had five options to choose from, here the answers “Decreased significantly” and “Somewhat decreased”, as well as “Increased significantly” and “Somewhat increased” are aggregated to “Decreased” and “Increased”, respectively (a fifth option: “No impact” is not reported in the table).

Source: own calculations based on the HIIT data (Hietanen et al., 2007).

Note 4. The HIIT data come from a 2007 study of over 6,000 people in Finland. The survey encompassed many questions about personal piracy behaviour, as well as questions about beliefs and perceptions regarding piracy. It has been previously used in studies such as Cox & Collins (2014). More information can be found in Hietanen et al. (2007, 2008).

I make further use of the dataset in sections III.4.1-III.4.3.

III.3. Piracy and its effects on demand and supply

The actual relationship between piracy and sales is difficult to measure and depends on the specific context. The main difficulty lies in the simple fact that higher-quality products will always be consumed more often through all possible channels. This simultaneity of paid and pirate consumption may bias the results toward a more positive relationship between piracy and legal sales if the potential for reverse causality or omitted variables is not addressed (see e.g. Rob and Waldfogel, 2007 who use both OLS and panel regression models to show how to circumvent some of the issues). There is also no one value for the effect of piracy on sales, as – for example – Adermon and Liang (2012)²⁸ found different relationships for different types of products, Reimers (2016) shows different effects on physical and digital formats, Ma et al. (2014) show that pre-release piracy might be more harmful than the post-release piracy, Bai & Waldfogel (2012) show different effects for the US and Chinese students and different for Chinese students and a sample of Chinese internet users, Blackburn (2006) shows that the relationship depends on the artist popularity and Koh et al. (2014) postulate that the relationship has changed over time. These factors highlight the need for continuous efforts to provide empirical evidence on how piracy affects specific branches of creative industries and how these effect evolve over time.

The first few research studies on the effects of file-sharing were actually conducted as part of the legal case against Napster. As Napster went to court, it claimed that the file-sharing it facilitated might actually increase music sales through promotion – see Zepeda (2002) for a summary of the lawsuit. As no evidence existed on the effects of online piracy, both the plaintiff and the defendants invited various experts to study the actual impact of Napster. These first few studies applied a variety of methods and presented conflicting evidence. Unsurprisingly, the experts on the side of the defendant found promotional effects (e.g. Fader, 2000; Hall, 2000), while the experts on the side of the plaintiff found substitution effects (e.g. Fine, 2000, Jay, 2000).

Moreover, many institutions and commercial firms have undertaken to measure these effects, often relying on hypothetical ‘what if’ survey questions (e.g. “*what would you do if you were not able to download this song for free*”) and multiple assumptions (e.g. on the actual substitution rate). The estimates from these reports, however, are largely inconsistent and provide numerous different pictures. In a report of the Institute for Policy Innovation, Siwek (2007) claims that in 2005 the U.S. economy lost \$58 billion in total output due to copyright piracy (i.e. motion picture, sound recording, packaged software and entertainment software piracy) and that this also translated into 373,375 lost jobs. For the motion picture piracy alone, Siwek (2006) claims a loss of \$20.5 billion. Notably, Siwek (2006) extended a prior study of LEK Consulting (2006), which claimed that the motion picture losses actually equalled \$6.1 billion worldwide. Still, a report by Digital TV Research (2017) claims that in 2010 the losses caused by TV and movie piracy equalled approximately \$6.7 billion but not only in the US but

²⁸ Admittedly, the paper was later published in a peer-reviewed journal (see: Adermon and Liang, 2014), with only the analysis for music sales.

also including 137 other countries. Surprisingly, despite the increasing (in that timeframe) popularity of legal streaming platforms, the Digital TV Research (2017) report also claims that the losses have increased to \$26.7 billion in 2016 and will likely increase to \$51.6 billion by 2022. In a report for the National Association of Manufacturers, Kerr and Moutray (2014) claim that the U.S. manufacturing sector lost \$239.9 billion in revenue between 2002 and 2012 due to software piracy (\$17.1 billion in 2005 – for comparison with previous figures). This, supposedly, amounted to a loss of 42,220 manufacturing jobs. For the EU, a report by EU IPO (2016) claims that in 2014 the recorded music piracy caused €170 million sales revenue loss for the music industry and a €336 million of lost sales to the EU economy as a whole, which lead to losses of 2,155 jobs. A report by TERA Consultants (2010) claimed that in 2008, the EU's creative industries experienced piracy-caused revenue losses of €9.9 billion (and 186,400 jobs). For a final comparison: the EU IPO (2016) report estimated losses of €26.4 million to the recorded music industry in France in 2014, while the TERA Consultants (2010) report placed the losses for the music industry in France in 2008 at €192 million.

Needless to say, these studies vary greatly in results both across years and institutions that conducted them. Moreover, some of them have received severed criticism due to flawed methodologies and used assumptions (see Cogill, 2012 for an overview of the academic criticisms of the Siwek, 2006, 2007; and Lek Consulting, 2006; studies). One feature these reports share is that the estimated losses exist and are economically large. However, the shortcomings of these reports raise concerns about their credibility.

Fortunately, numerous independent researchers have also taken to estimate the relationship between piracy and sales. These research studies typically include more robust methods and fewer assumptions. Instead they rely on econometric methods or quasi-experimental designs to identify the true effect of piracy on sales. This body of literature also shows that the big picture of the effects of piracy is a puzzle of many pieces differing in the timing of the study and its context. Still, the results predominantly indicate negative effects, as summarised and discuss in Section III.3.1.

III.3.1. Academic research on the effects of piracy

III.3.1.1. Effects on demand in the music industry

The music industry, for which the fight with piracy started first, was explored most in the research studies. Most of the analyses focused on the effects for physical sales, usually around the time of the launch of Napster. For the years between 2008 and 2018, the analyses predominantly concern digital formats, with some gap years not covered by any studies. Most of the literature distinguishes between the digital and physical types of channels and different types of goods (e.g. album sales and song sales). Moreover, several studies look at factors moderating the effects of piracy. The literature on music sales displacement is summarised in Table 4.

Several studies took a broad look at the music industry – by estimating the effects on revenues in general or several physical formats together. A few studies applied the same methodology to look at both the physical and digital channels. In a cross-country sample, Bustinza et al. (2010) find a negative relationship between file-sharing behaviour and music industry revenue per capita. Zentner (2005, 2006), Bender and Wang (2009), Bastard et al. (2014) as well as Adermon and Liang (2014) found a negative relationship between piracy and physical music sales in general. Zentner (2009) and Ende et al. (2018) found a negative effect on the demand for both physical and digital formats. On the other hand, Chi (2008) found a positive effect of piracy on music purchases (of both physical and digital music), Ende

et al. (2015) a positive of illegal downloads on legal downloads and no effect on physical purchases, while McKenzie (2009) found no effect on physical and digital sales in Australia.

Most studies showed negative effects of piracy on music album sales. Peitz and Waelbroeck (2004), Rob and Waldfogel (2006), Stevans and Sessions (2005), Michel (2006), Liebowitz (2008), Elberse (2010), Mooney et al. (2010), Barker and Maloney (2015), Mortimer et al. (2012), Hong (2013) and Leung (2015) claim unauthorized music supply displaced music album sales. Still, Tanaka (2004), Oberholzer-Gee and Strumpf (2007) and Andersen and Frenz (2010) did not find any relationship.

More recent studies more often focus on digital music, typically finding displacement from piracy. Adermon and Liang (2014) reported negative relationship for digital music in general. Danaher, Smith, Telang and Chen (2014) showed a negative link for digital albums and several studies found negative links for sales of single digital songs: Rochelandet and Le Guel (2005); Elberse (2010); Waldfogel (2010); Danaher, Smith, Telang and Chen (2014). In contrast, Aguiar and Martens (2016) found a positive, though small, relationship with digital music sales in some countries.

Interestingly, piracy has been shown to carry mostly positive effects for some of the less traditional revenue channels related to the music industry. Leung (2015) found an increase in iPod sales resulting from piracy. Mortimer et al. (2012) and Ende et al. (2015, 2018) found an increase in revenues from live performance attendance. Navissi et al. (2005) took a different approach and showed that anti-Napster events coincided with decreases of stock prices of music firms, while pro-Napster events increased them (suggesting that the music industry actually benefitted from Napster). Still, Zentner (2008) notes a decrease in numbers of music stores in the US, resulting from piracy.

Importantly, numerous researchers report that the effects of piracy vary across several dimensions. For example, Boorstin (2004) suggests a negative effect among younger age groups and a positive among the older (with positive for the sample as a whole). Blackburn (2006) finds a positive effect for lesser known artists and a negative for the popular ones (with a net loss to the industry, as the popular artists comprised the bulk of the revenues). Lee (2018) supports these results, finding negative effects for sales of top artists but positive for mid-tier ones. Still, Bhattacharjee et al. (2007) shows a seemingly opposite relationship: a piracy-caused reduction in Billboard chart survival for all but the highest-ranking titles and Gopal et al. (2006) argue that piracy can increase the sales of higher-valued music. Similarly to Bhattacharjee et al. (2007), Hammond (2014) finds a positive effect for the most popular artists (and practically no effects when looking at the sample as a whole). Koh et al. (2014) show that the negative link with physical sales has grown weaker with time and availability of legal alternatives. Bounie et al. (2007) divide the downloaders into pirates (who substitute purchases with downloads) and explorers (for whom downloading increases purchases). See Table 4 for a list of factors differentiating the effects.

III.3.1.2. Effects on demand in the film/TV industry

The literature for the movie industry is almost as extensive and typically focuses on cinemas, physical formats, digital formats or rentals. The box office and physical format sales have been studied continuously between 2002 and 2018. The rentals have been mostly studied in the first half of this period, while digital formats in the second. Two studies – Rob and Waldfogel (2007) and Bai and Waldfogel (2012) – studied the relationship between authorized and unauthorized movie consumption regardless of the channel, finding a negative relationship for both US and Chinese student samples,

although they did not find any relationship for Chinese internet users. The literature on film/TV revenues displacement is summarised in Table 5.

Many studies have been conducted for the case of box office revenues. De Vany and Walls (2007), Hennig-Thurau et al. (2007), Safner (2013), Ma et al. (2014), Ende et al. (2015, 2018), Ma et al. (2016), McKenzie and Walls (2016) and Herz and Kiljański (2018) found a negative impact of file-sharing on theatre attendance. However, Bounie et al. (2006), Zentner (2010) and Adermon and Liang (2012) found no effect on box office. Moreover, Peukert et al. (2017) showed that the relationship might be actually positive for small and medium movies but negative for the very large ones.

Other researchers focused on the traditional channels, with conflicting findings. Bounie et al. (2006) and Hennig-Thurau et al. (2007) found a negative effect on sales and rentals of movies in DVD and VHS formats, with Zentner (2010) also finding a negative effect on video sales and Herz and Kiljański (2018) finding a negative effect for DVDs. Smith and Telang (2016b) show a negative effect of international lags in DVD release on sales (caused by pre-release piracy). Finally, Waldfogel (2009), Hardy (2018) and Herz and Kiljański (2018) showed a negative relationship of piracy with TV viewership. On the other hand, Ende et al. (2018) found a positive effect on rentals. Zentner (2010) found no effect for rentals and multiple studies have found no relationship for DVD sales (Smith and Telang, 2009; Adermon and Liang, 2012; Martikainen, 2014; Bastard et al., 2014).

Most studies found a negative link with digital channels. Danaher and Smith (2014) found a negative impact on sales of movies in the digital format. Ende et al. (2018) and Herz and Kiljański (2018) found a negative one on streams. Danaher, Smith and Telang (2015, 2016) showed that blocking infringing websites can increase the traffic to legal streaming websites. Still, Ende et al. (2015) found a positive impact on legal downloads, while Bastard et al. (2014) found no relationship with digital film sales.

III.3.1.3. Effects on demand in other industries

So far, most other industries remain understudied, with only few articles mostly focused on the book industry (see Table 6). Bastard et al. (2014), Hardy et al. (2014) and Reimers (2016) found no significant relationship between piracy and sales of print books, though Ende et al. (2015, 2018) found a negative one. Ende et al. (2015) found a positive effect of illegal downloads on legal streams of books, but in an update of the study Ende et al. (2018) showed that the opposite was the case.²⁹ Moreover, Bastard et al. (2014) found a positive effect for digital sales of books, though Reimers (2016) showed the opposite. Notably, the study of Bastard et al. (2014) uses proxy data for individual characteristics, while the study of Reimers (2016) is based on a quasi-experiment – as such, the results of the latter seem more robust.

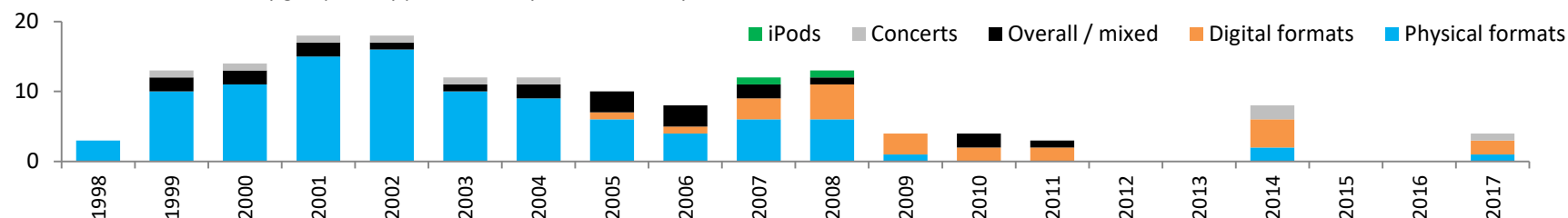
Evidence on other industries is even scarcer. Tanaka (2016) found heterogeneous effects on manga comics (Japanese art style comic books) – a negative for ongoing series, but a positive for finished series. Bastard et al. (2014) found a positive relationship between piracy and video game purchases, Fukugawa (2018) found a weak positive relationship between the purchases and downloads of portable platform video games in Japan and Ende et al. (2015) found a positive effect of piracy on the digital sales of video games and a negative on the consumption of free games. Still, Ende et al. (2018), who updated the study of Ende et al. (2015), find negative effects for physical, digital and streamed games. Finally, Dawei (2011) presented evidence that mobile application piracy might promote app sales.

²⁹ Regrettably, the authors do not provide a discussion on what is responsible for the different result. It is likely any combination of: a slightly improved method of analysis, year of the study or the choice of analysed countries.

Table 4. Summary of literature on effects of piracy across different formats – music industry.

Group	Formats under study	Measures	Aggregate effect (only published)	Effects might depend on	Studies	% published in journals
Physical formats	Albums, Cassettes, CDs, Demand for records, Physical albums, Physical music, Physical singles, Recorded music, Vinyls	Chart rank, Chart survival, Expenditure, Number of stores, Purchases, Sales, Sales per capita, Willingness To Pay	Neg.: 73% (81%) Pos.: 3% (0%)	Album price, Artist popularity, Casual/Heavy pirates, Consumer age, International/Domestic artist, Internet penetration, Music genre, Period, Pirates/Explorers, Product value	Adermon and Liang (2014), Andersen and Frenz (2010), Barker and Maloney (2015), Bastard et al. (2014), Bender and Wang (2009), Bhattacharjee et al. (2007), Blackburn (2006), Boorstin (2004), Bounie et al. (2007), Ende et al. (2015), Ende et al. (2018), Gopal et al. (2006), Hong (2013), Koh et al. (2014), Lee (2018), Leung (2015), Liebowitz (2008), McKenzie (2009), Michel (2006), Mooney et al. (2010), Mortimer et al. (2012), Oberholzer-Gee and Strumpf (2007), Peitz and Waelbroeck (2004), Rob and Waldfogel (2006), Rochelandet and Le Guel (2005), Stevans and Sessions (2005), Tanaka (2004), Zentner (2005), Zentner (2006), Zentner (2008), Zentner (2009)	84%
Digital formats	Digital albums, Digital music, Digital singles, Digital songs, iTunes songs, Streamed songs, Licensed websites traffic	Chart rank, Clicks, Downloads, Purchases, Sales, Streams	Neg.: 47% (67%) Pos.: 13% (11%)	Album price, Artist popularity, Casual/Heavy pirates, International/Domestic artist, Music genre	Adermon and Liang (2014), Aguiar and Martens (2016), Bastard et al. (2014), Danaher, Smith, Telang and Chen (2014), Elberse (2010), Ende et al. (2015), Ende et al. (2018), Lee (2018), Leung (2015), McKenzie (2009), Waldfogel (2010)	82%
Overall / mixed	Albums, Music, Music industry, Music-related firms	Purchases, Revenue per capita, Sales, Stock returns of music-related firms	Neg.: 50% (60%) Pos.: 33% (20%)	Artist popularity	Bustanza et al. (2013), Chi (2008), Elberse (2010), Hammond (2014), Navissi et al. (2005), Zentner (2009)	83%
Concerts	Live concerts	Revenues, Attendance	Neg.: 0% (0%) Pos.: 100% (100%)	Artist popularity	Ende et al. (2015), Ende et al. (2018), Mortimer et al. (2012)	33%
iPods	iPods	Sales	Neg.: 0% (0%) Pos.: 100% (100%)	-	Leung (2015)	100%

Figure 10. Number of estimates by group and by period of study – music industry

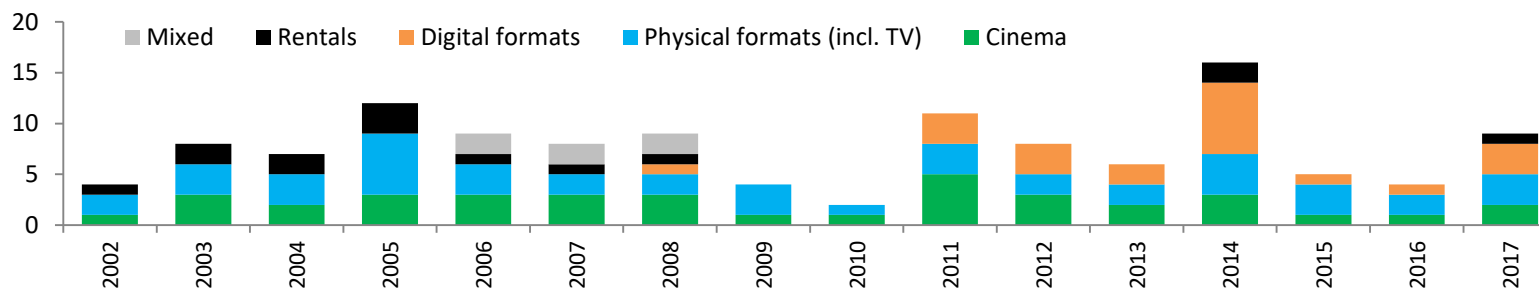


Note: For the aggregate effects, the final conclusions were chosen from the papers. When effects were not uniform across the sample (e.g. positive for some titles and negative for others), the aggregate effect was counted (the one that prevailed). Similarly, if no effect was found for part of the sample, but a negative for the other, the estimate was counted as negative. The factors in the “effects might depend on” sometimes moderated the sign of the effect and sometimes only the size. The periods covered by the studies include all the years that the data covered (e.g. if the study used data from 2003 to 2008, it was counted for each of those years). For studies that used difference-in-differences, marking a period as the beginning of piracy, only the years with piracy were counted. “% published in journals” indicates the share of cited studies that appeared in peer-reviewed journals.

Table 5. Summary of literature on effects of piracy across different formats – film/TV industry.

Group	Formats under study	Measures	Aggregate effect (only published)	Effects might depend on	Studies	% published in journals
Cinema	Box office, Theater tickets	Revenues, Viewings in cinemas, Visits to cinemas, Sales of theater tickets	Neg.: 81% (86%) Pos.: 6% (14%)	Moment of film lifecycle, Movie popularity (number of theaters at premiere), Quality, Source of pirate content, Theatrical release gap, Word-of-mouth	Adermon and Liang (2012), Bounie et al. (2006), De Vany and Walls (2007), Ende et al. (2015), Ende et al. (2018), Herz and Kiljański (2018), Ma et al. (2014), Ma et al. (2016), McKenzie and Walls (2016), Peukert et al. (2017), Rob and Waldfogel (2007), Safner (2013), Zentner (2010)	54%
Physical formats (incl. TV)	DVDs, DVD movies, DVDs on Amazon, DVDs or VHS, DVDs or BluRay (movies/TV), Physical movies or series, TV viewing	Purchases, Sales, Viewings (movies), Viewings (series)	Neg.: 67% (60%) Pos.: 0% (0%)	Casual/Heavy pirates, Consumption propensity, Country piracy levels	Adermon and Liang (2012), Bastard et al. (2014), Bounie et al. (2006), Ende et al. (2015), Ende et al. (2018), Hardy (2018), Herz and Kiljański (2018), Martikainen (2014), Rob and Waldfogel (2007), Smith and Telang (2009), Smith and Telang (2016b), Waldfogel (2009), Zentner (2010)	54%
Digital formats	Digital movies, Digital series, Digital, Streaming websites (ad-supported), Streaming websites (general), Streaming websites (subscription)	Downloads, Revenues of Motion Picture studios, Streams, Viewings, Visits	Neg.: 57% (75%) Pos.: 14% (0%)	Casual/Heavy pirates	Bastard et al. (2014), Danaher and Smith (2014), Danaher, Smith and Telang (2015), Danaher et al. (2016), Ende et al. (2015), Ende et al. (2018), Herz and Kiljański (2018)	43%
Rentals	DVDs or VHS, Movies or series, Movies	Rentals, Viewings	Neg.: 33% (100%) Pos.: 33% (0%)	Rental subscription or not	Bounie et al. (2006), Ende et al. (2015), Ende et al. (2018), Rob and Waldfogel (2007), Zentner (2010)	40%
Mixed	Any format	Viewing	Neg.: 50% (50%) Pos.: 0% (0%)	Sample	Bai and Waldfogel (2012)	100%

Figure 11. Number of estimates by group and by period of study – film/TV industry



Note: For the aggregate effects, the final conclusions were chosen from the papers. When effects were not uniform across the sample (e.g. positive for some titles and negative for others), the aggregate effect was counted (the one that prevailed). Similarly, if no effect was found for part of the sample, but a negative for the other, the estimate was counted as negative. The factors in the “effects might depend on” sometimes moderated the sign of the effect and sometimes only the size. The periods covered by the studies include all the years that the data covered (e.g. if the study used data from 2003 to 2008, it was counted for each of those years). For studies that used difference-in-differences, marking a period as the beginning of piracy, only the years with piracy were counted. “% published in journals” indicates the share of cited studies that appeared in peer-reviewed journals.

III.3.1.4. Effects on supply and quality

Economic theory and industry representatives suggest that another effect of piracy could pertain to the supply of cultural content like music or movies, rather than the demand. The simple explanation would be that piracy causes a reduction of revenues, which serves as a disincentive for creation. However, the few studies on this issue find no such effect. Handke (2006) shows a growing number of small record companies in Germany. Oberholzer-Gee and Strumpf (2010) report figures reflecting a growth in both music albums and of movie productions (even in countries with high film piracy levels). Waldfogel (2011, 2012a) shows that the number of quality music titles did not decline following the introduction of Napster or following the introduction of iTunes. Waldfogel (2011) also note a growing role of independent labels (indeed, two recent reports highlight the growing share of independent labels in the music market – Wintel, 2016, 2017). Handke (2012a) shows that the number of new titles in the German music market has been growing steadily. At the same time, the amount of time spent listening to music also has not fallen, which Handke (2012a) interprets as an indication that the quality remained stable. Aguiar et al. (2015) provide evidence that the quality of music since Napster might have actually increased. Notably, it is difficult to isolate the effects of piracy on the supply from other effects of digitisation and the internet (e.g. reduced production costs and new channels of distribution). As such, it is unclear whether the supply growth would not have been larger without piracy. Still, should a negative effect of piracy exist, it does not seem large enough to exact a net decrease in the supply or quality.

III.3.1.5. Existing literature reviews

Despite most studies indicating a negative relationship of piracy with the demand for legal alternatives, many scholars of the subject have not reached a consensus. For one, many of the studies are not generalizable to country-level outcomes or are otherwise limited. In his review of literature on music and movie piracy published prior to 2009, Dejean (2009) states that “(...) *the negative relationship between sales of cultural goods and piracy is not so clear*” and points out the need for further studies. Similarly, Grassmuck (2010) claims that the prior evidence on the effects on album sales is inconclusive, but that the music industry likely benefits through increased sales of merchandise and concert revenues. He also points to social welfare gains induced by piracy. Oberholzer-Gee and Strumpf (2010) also summarise the literature for both music and movie industries as mixed in terms of the direction of the relationship. Handke (2012b) provides an extensive overview of the literature and considering the caveats of existing studies concludes that the effect remains contentious.

On the other hand, several researchers consider the effect to be mostly negative for sales. In his review Waldfogel (2012b) concludes that the evidence points towards negative effects for both music and films. Similarly, Novos and Waldman (2013) summarise the available literature and conclude that piracy does reduce sales. Koh et al. (2014) looks at literature on music piracy up until 2011 and shows that the negative relationship of piracy and sales was more evident when using data from before 2003 (the year when iTunes and other legal digital alternatives were introduced). In a more recent review, Danaher, Dhanasobhon, Smith and Telang (2014) look at the studies for both music and movie industries and conclude that almost all of the peer-reviewed studies indicate a negative effect on sales. Liebowitz (2016a) evaluated the literature on music file-sharing and derived metrics for comparison of the many results. He concludes that most studies attribute the whole of the decline in the music industry revenues to file-sharing, with the few reporting a smaller contribution being based on data from after 2005.

The compilation of empirical research on movie and music industries described in the two paragraphs above and Table 4 and Table 5 is more comprehensive than the ones in the cited reviews. Importantly, however, it is difficult to assert which of these studies can be treated as representative, current and robust. Still, based on the said compilation, it seems that the estimated effects are predominantly negative, sometimes neutral and rarely positive. This is even more evident when only the peer-reviewed and published studies are considered. Moreover, some of the studies not finding a negative effect have been criticised for their methodological shortcomings – see e.g. the lengthy critique of Oberholzer-Gee and Strumpf (2007) by Liebowitz (2007a, 2007b, 2010, 2016b), the subsequent response by Oberholzer-Gee and Strumpf (2016) and the response to the response and a replication by Liebowitz (2017a, 2017b, 2017c); or see Barker and Maloney (2015) using the same data as Andersen and Frenz (2010) but arriving at different conclusions, while pointing out methodology issues of the latter.

III.3.2. Industries not covered by academic research

Many other industries face the challenge of piracy – as evidenced by media news or stakeholder concerns – for whom the actual level or direction of impact is not yet known. Non-manga comic books constitute one such case, as the superhero genre or European comics target audiences very different to that of Japanese comics readers. In a group of heavy comics readers, as many as every fifth top-selling DC/Marvel comic book issue might be acquired for reading from an unpaid source (see Chapter IV). Yet, this thesis is the first to provide estimates of the effects of piracy on the American comic book market.

In another prominent example, sports broadcasters struggle with illegal streaming of live events, with reports showing massive unauthorised viewership (Sandvine, 2017b). NetResult (2011) provide a broad view on piracy of different sports and how it has been progressing. Irdeto (2014, 2018) report that football tournaments tend to be widely pirated across the globe and that Irdeto anti-piracy teams managed to disrupt app. 10.6 million views (across 3,743 streams) during the 2014 World Cup. Interestingly, almost half of those streams came from social media like Facebook or Twitch. In general, these reports raise concerns that piracy harms the revenues of the sports industries.

Board games, despite mostly consisting of physical elements, are challenged both by counterfeiting (e.g. copies from AliExpress or even Amazon) and piracy (shared scans and graphic designs allow for low-cost replication of most titles).³⁰ The latter has become a growing issue with the advances in digital copying and hardware. Jarvis (2018) talked to several game publisher representatives about the scale of the problem with some claiming that fake sales might reach the levels of 60% of all sales for the very popular titles (in another interview, the CEO of the game company put the share at 70% - ICv2, 2018).

In another example of technology introducing piracy to physical objects, 3D printing has already been recognised as a problem by miniatures producers. It is now possible to own a 3D printer in home and to reproduce model designs. 3D printing also allows to replicate the tabletop games elements that the traditional printers cannot.³¹ Some authors predict that 3D printing will eventually disrupt many of the current business models (Garrett, 2014). In 2011 some companies sought to take down 3D designs from the internet, as they considered them copies of their own work and in 2012, The Pirate Bay added “physibles” as a content category (for a story on both see Rundle, 2012). Since then, sets of 3D models from known tabletop war games have been shared online (see e.g. Gambody, 2016).

³⁰ For a discussion on board game piracy, see the BoardGameGeek forums discussion: “Piracy and board gaming – your thoughts”, URL: <https://boardgamegeek.com/thread/832867/piracy-and-board-gaming-your-thoughts> (accessed: 2018-07-29).

³¹ See e.g. a magazine story by Fox (2012).

Table 6. Summary of literature on effects of piracy across different formats – games / apps and books.

Group	Formats under study	Measures	Aggregate effect (only published)	Effects might depend on	Studies	% published in journals
GAMES/APPS						
Physical formats	Portable video games, Physical games	Purchases	Neg.: 20% (0%) Pos.: 20% (50%)	Casual/Heavy pirates	Bastard et al. (2014), Ende et al. (2015), Ende et al. (2018), Fukugawa (2018)	50%
Digital formats	Cloud video games, Free video games, Video games	Downloads, Plays, Streams, Transactions	Neg.: 33% (0%) Pos.: 42% (100%)	Casual/Heavy pirates	Bastard et al. (2014), Ende et al. (2015), Ende et al. (2018)	33%
Mobile apps	Mobile apps	Downloads, Revenues of Motion Picture studios, Streams, Viewings, Visits	Neg.: 0% (-) Pos.: 100% (-)	App popularity, App quality	Dawei (2011)	0%
BOOKS						
Physical formats	Print books, Books	Borrowing, Purchases, Sales	Neg.: 43% (0%) Pos.: 14% (50%)	Artist popularity, Casual/Heavy pirates	Bastard et al. (2014), Ende et al. (2015), Ende et al. (2018), Hardy et al. (2014), Reimers (2016)	40%
Digital formats	E-books, Audiobooks	Downloads, Sales, Streams	Neg.: 29% (33%) Pos.: 29% (33%)	Artist popularity, Casual/Heavy pirates	Bastard et al. (2014), Ende et al. (2015), Ende et al. (2018), Reimers (2016)	50%
Manga comics	Manga comic books	Sales	Neg.: 0% (-) Pos.: 0% (-)	Series finished / Series ongoing	Tanaka (2016)	0%

Figure 12. Number of estimates by group and by period of study – Games/Apps

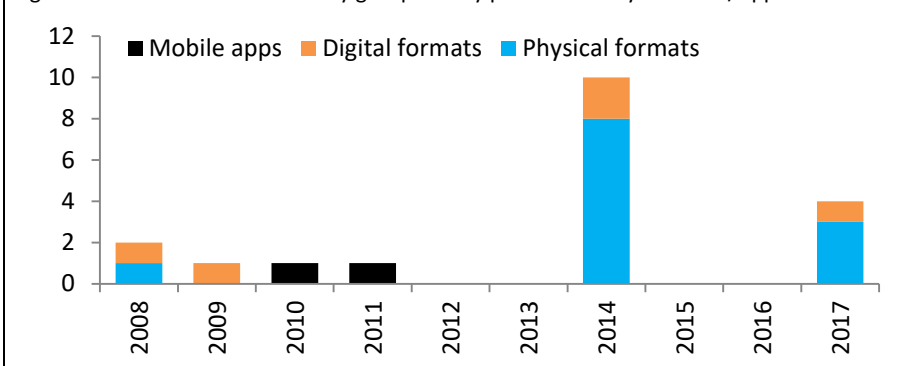
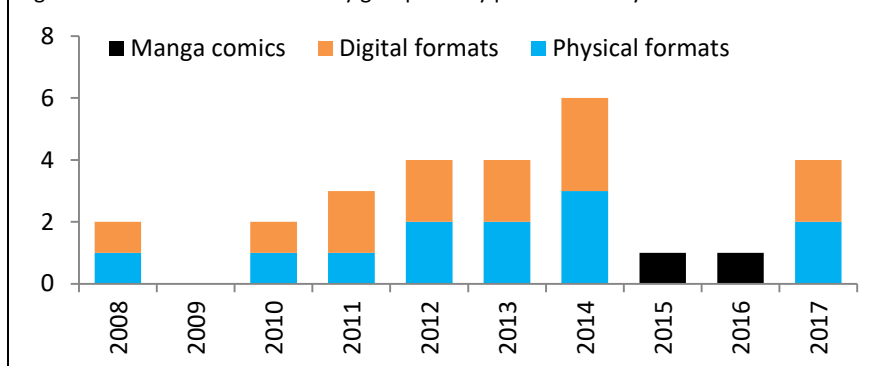


Figure 13. Number of estimates by group and by period of study – Books



Note: For the aggregate effects, the final conclusions were chosen from the papers. When effects were not uniform across the sample (e.g. positive for some titles and negative for others), the aggregate effect was counted (the one that prevailed). Similarly, if no effect was found for part of the sample, but a negative for the other, the estimate was counted as negative. The factors in the “effects might depend on” sometimes moderated the sign of the effect and sometimes only the size. The periods covered by the studies include all the years that the data covered (e.g. if the study used data from 2003 to 2008, it was counted for each those years). For studies that used difference-in-differences, marking a period as the beginning of piracy, only the years with piracy were counted. “% published in journals” indicates the share of cited studies that appeared in peer-reviewed journals.

Services like Sci-Hub have recently disrupted the research market and are being used all around the world (Bohannon, 2016). Babutsidze (2016) argues that potential lost revenues of the research publisher cannot be large, but he does not provide any direct estimates of an effect.³²

Finally, the adult movies industry has been heavily disrupted by digitisation, platforms and piracy (Metz, 2015), but has received little attention from research or law enforcement. The situation is directly linked to ‘pornography’ being a taboo topic, with lawyers and courts not wanting to attach themselves with the protection of the pornographic industry and researchers not wanting to study the associated issues. At the same time, the pornographic industry is at a technological disadvantage, as many of its customers would prefer not to give up any of their data and many outlets banning the distribution of pornographic content through their platforms. Ironically, developing a successful anti-piracy solution for the pornographic business could likely both support the creators³³ and decrease the pornography viewership – especially among the underage audience (Brown, 2014).

All these markets contain unique features or at the very least unique combinations of features, making any extrapolations of evidence from other industries difficult. Sports piracy pertains to goods that have a very limited usability – one that expires shortly after the event takes place in real life. Comic books and graphic novels are in some way similar to TV shows and movies (in terms of seriality and time of consumption), in some ways to books (mode of consumption), but are also associated with hobby collecting. Tabletop game piracy is not entirely free (typically requires finding a printing service to replicate the original quality) and might require additional effort (e.g. to cut the elements) or resources (e.g. for 3D printing). 3D printing in general is the first to provide a unique mix of physical and digital piracy where digital technology allows for distribution and copying of a strictly physical good. Research piracy affects a very distinct audience of academics, researchers and scholars, while also challenging a unique form of traditional distribution (subscriptions of education institutions). Adult movies piracy pertains to a stigmatised industry, largely deprived of legal or technological support. Thus, the current literature on piracy covers only a part of the industries in the digital market (even if a significant one). However, it is likely that its results cannot be extended to the other entrants to digital distribution. Moreover, it is also difficult to assess whether some of the older study results can be extended to the current market structure. As pointed out in Chapter I, the digital landscape has evolved much since the beginning of the XXI century. Rather piracy and its interaction with creative industries should be considered from a broader perspective of an evolving market, with the role of piracy evolving alongside of it.

III.4. Lock-in in the presence of piracy

As the competition between both legal and pirate providers continues, providers leverage the switching costs to try and lock-in the customers to their services. The most common types of switching costs occurring between the legal providers – as well as how they were affected by digitalisation – have been briefly summarised in Section I.3.4. However, different types of switching costs apply when considering the switch between legal and illegal content providers. Moreover, as in the previously described case of the Alliance for Creativity and Entertainment, the legal providers

³² It seems that Muller and Iriarte (2017) have been analysing the effects on the academic library services, but currently only a conference presentation of their results is available and it is too little to infer what their findings are.

³³ See McKee (2016) for why it is important to include pornographic industry in the general research area related to creative industries (due to similarities) and the particular features of the pornographic industry that make it stand out and also in need of more research.

have been known to group together in order to jointly compete with the illegal providers. This highlights that switching costs play an important role in the rivalry between legal and illegal channels.

Reducing the switching costs of changing from piracy to legal channels could incentivise some of the non-paying consumers to become customers. Most research on this direction of switching considered the effects of the existence of convenient legal alternatives (typically in the form of streaming services) on the consumption decisions. In a Spotify report, Page (2013), shows that the number of music pirates in Netherlands decreased following the introduction of Spotify, and that artists delaying their release to Spotify face higher piracy levels. Further linking these adverts to the effects of music streaming, Poort and Weda (2015) concluded that Dutch consumers were switching from unauthorised channels to official digital distribution for the case of music consumption, but they were less likely to do so for films and series. The surveys were conducted before the roll out of Netflix to Netherlands and the authors linked the differences between music and films/series to differences in availability and technical quality of the legal alternatives. Matos et al. 2017 showed that gifting a stream access to TV channels to consumers can have a small negative effect on unauthorised viewing, which is further moderated by the quality of matching of the offer to the individual's taste. Danaher, Dhanasobhon, Smith and Telang (2015) showed a significant drop of piracy for ABC TV content, following its introduction to the Hulu.com platform. Aguiar and Waldfogel (2018) show that streaming reduces unauthorised viewership, though at the same it reduces music sales and the effects may balance each other out in terms of revenues. Yet, Aguiar (2017) concludes that music streaming actually stimulates both sales and unauthorised consumption (Aguiar and Martens, 2016, also point at a potential complementary effect of licensed website music streaming on digital purchase).³⁴ Borja et al. (2015, 2016) also find a strong positive correlation between streaming and illegal downloads (though their study does not really allow to claim causal effects). Notably, the effects of the introduction of a new channel might be different to an ongoing displacement between an established channel and an illegal one (e.g. launching a streaming service could lower unauthorised consumption level itself, but not affect the substitution rate between the unauthorised and authorised consumption). Given the varying conclusions in the literature, more research is needed on converting pirates to buyers in the presence of switching costs.

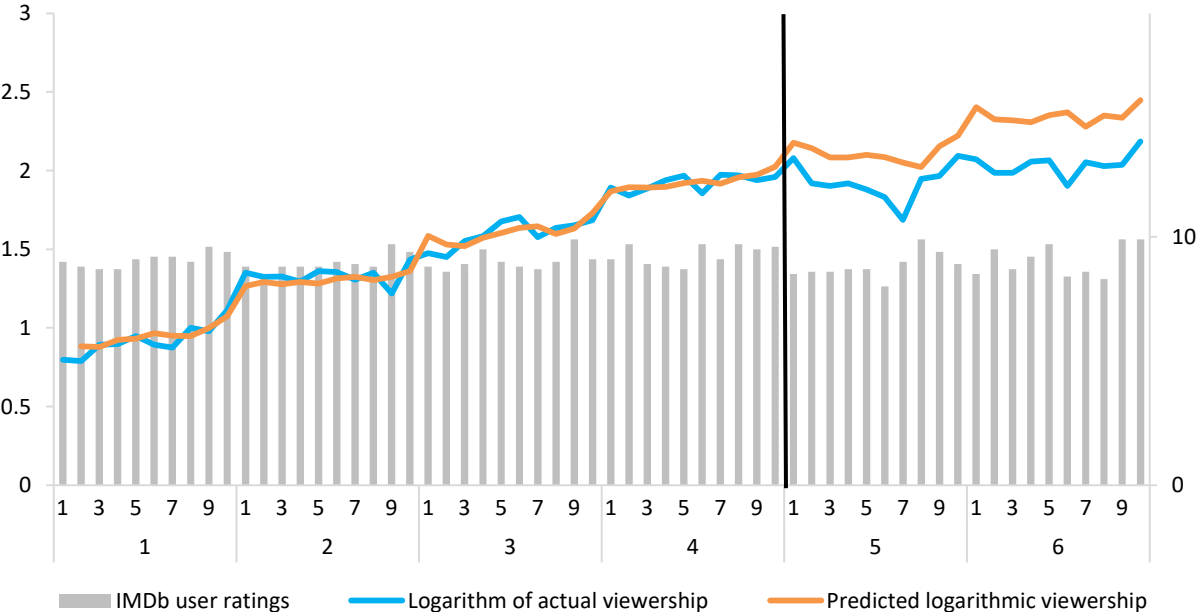
Lock-in effects could play a vital role in reducing the amount of unauthorised consumption by targeting the significant share of customers with little or no prior piracy experience. For example, a report by SARI (2018) found that as many as 27% of pirates in Australia can be classified as "nervous newcomers". These pirates have only started accessing pirate sources. As such, they are more likely to search for sources through search engines, are more easily deterred by website blocking and are more likely to stumble upon illegal sources unintentionally (when performing legitimate searches). Millward Brown Digital (2013) support this, showing that first time visits to infringing websites are almost twice more likely to occur through searches than are visits from repeat visitors. These data suggest that a large share of pirates can be described as learners or even circumstantial customers who stumbled upon unauthorised sources by accident.

Moreover, the existence of switching costs of unauthorised sources makes it imperative to prevent any incentives to using these channels. Danaher et al. (2010) analysed the withdrawal of NBC TV content from the digital service iTunes. The researchers observed a huge boost in the unauthorised

³⁴ Aguiar (2017) highlights that the Aguiar and Waldfogel (2017) study did not differentiate between free and premium services, as its limitation.

traffic for the said content immediately following the withdrawal. The effect was likely driven by the lack of legal digital alternative after the content disappeared from its usual distributor’s catalogue. However, when after nine months the content was restored to the digital store, the researchers observed that the unauthorised traffic did not decrease. Moreover, it seems that the increase in the level of piracy consumption for NBC content exceeded the previous legal consumption. As authors explain, it is likely that the withdrawal from NBC incentivised the consumers to try the pirate channels. Once they have learned how to use them (or overcame other switching costs), they were reluctant to return to the official channel after it returned. Moreover, they used the unauthorised channel in search of NBC content they would not have otherwise consumed. Thus, as the viewers were incentivised to incur those costs, they became more likely to use these channels again.

Figure 14. Game of Thrones ratings, viewership, and predicted viewership.



Note: The horizontal axis shows episode numbers (1-10; row 1) in each of the seasons (1-6; row 2). The vertical line marks the leak, which occurred just before the first episode of season 5. The prediction is based on an OLS model on the sample of seasons 1-4, with the logarithm of viewership as an explaining variable; and the previous episode’s viewership, the previous episode’s ratings, the season number, and the dummies for season premieres and finales as explaining variables. The seventh season had the highest viewership numbers of all the seasons, but is not included here because it had a different number of episodes (seven) and a very different (summer) air date schedule (July-August).

Source: Hardy (2018).

Similarly, Hardy (2018) showed that pre-release leaks of TV content might incentivise consumers to switch to unauthorised sources – even for the content that has not leaked. To demonstrate that this was the case, I used a unique dataset on a sample of TV shows aired around the time of a pre-release leak of a major TV show (Game of Thrones) with information combined from several sources (including Nielsen first-day US TV ratings, IMDb information on TV shows and episode ratings, and Google Trends popularity). The final sample comprised more than 4,500 episodes of 52 shows. The results of an econometric analysis indicated that the leaked TV show lost viewership for both the four leaked episodes and the subsequent ones. Moreover, the event carried negative effects for TV shows identified as having a shared audience with the leaked show. Finally, I corroborated my results on the shows with shared audience with an analysis of Google search popularity – finding that it has

increased after the leak for phrases including the show names and the words “watch online”. My findings highlight both the existence of switching costs and the need for companies to avoid providing incentives for overcoming them. Figure 14 shows the first-day TV viewership of the Game of Thrones episodes and a simple prediction of the viewership based on user ratings and previous dynamics. The fifth season of the show (with first four episodes leaked before the premiere) was the first not to record a substantial gain in TV viewership relative to the previous season.

Despite their importance, switching costs received little to no attention in the context of competition between the official providers and the pirate providers. Few studies that point to them rarely define them as ‘switching costs’ and typically omit the existing switching costs literature. Moreover, in some of these studies, the switching costs are not the actual focus of the research. Hill (2007) looked at switching costs between product lines in a market with piracy. However, the authors did not consider the switching costs between the authorised and unauthorised sources, but rather looked at piracy as a potential tool affecting switching across providers.³⁵ In another partially related study, Bhattacharjee et al. (2006) consider costs of switching between legal and illegal channels but they define the costs as fixed costs associated with searching. They show that the legal providers have an incentive to provide well-tailored and efficient search engines, which highlights that the legal and pirate channels might differ in terms of the effort required to use them. Notably, switching to a pirate provider does not necessitate abandonment of the legal channel. In fact, many consumers use both pirate and legal channels (e.g. Bode, 2018b). However, overcoming the switching costs of piracy might be enough to displace part of the paid consumption at an individual level.

In Sections III.4.1-III.4.3 I provide a literature review and own analysis listing the switching costs that are either unique to the pirate provider or are larger for their case. The review is based around the switching costs typology of Burnham et al. (2003) described in Section I.3.4. I consider three issues: first, whether a specific cost actually exists in the context of piracy. If the consumers look for an unauthorised alternative but encounter barriers, it could affect their further decisions. Second, whether the consumers know about the existence of the cost. Otherwise, the cost would only carry a deterring impact if it was temporary and not fully incurred with the first use of an unauthorised channel. Notably, if a consumer believes that a specific cost exists (despite its actual non-existence) it could be enough to deter them from looking for a pirate channel in the first place. Third, whether the cost is one-time or at least decreases over time. For the costs to be considered switching costs, they need to be temporary in nature and only act as a barrier for the initial switch to a piracy provider.

Note 5. To highlight some of my points in the following Sections, I rely on available evidence and previous findings in the form of academic articles, books, reports, press materials, etc. However, to support some of my statements I also make use of the available data to show specific statistics or relationships related to piracy, at few points referring to the HIIT data introduced in section III.2.

³⁵ This effect would exist in the presence of strong network effects, whereas the switching costs arise as consumers become concentrated in the products of a specific producer (see section I.3). Software constitutes a good example of such a case. This constitutes an interesting point of view on complementarity between the purchased and pirated goods and that in some cases the providers might consider switching costs that increase as both paid and unpaid consumption increases. Indeed, Bill Gates of Microsoft recognised this back in 1998 and said: “[About] 3 million computers get sold every year in China, but people don't pay for the software. Someday they will, though. As long as they are going to steal it, we want them to steal ours. They'll get sort of addicted, and then we'll somehow figure out how to collect sometime in the next decade.” (Grice and Junnarkar, 1998).

III.4.1. Procedural switching costs

III.4.1.1. Economic risk costs

In terms of risk costs, acquiring content from pirate providers can be associated with a range of risks non-applicable to the authorised providers. This is mainly because of the legal issues associated with pirate distribution and limited capacity of delivering content. These risks can be partially (though rarely fully) decreased with learning or deployment of additional computer protection – making them partially switching costs. The following risks apply to pirate providers: risk of fake content (reduced by learning), risk of malware (reduced by learning and anti-virus software), risk of low quality (reduced by learning), legal risks (partially fixed and partially reduced by learning or specialised protection – e.g. VPN) and uncertainty risks (higher and ongoing for the pirate provider).

Risk of fake content

Acquiring content from pirate providers is associated with risks of acquiring fake content – i.e. with risks of misleading labels of the sought files. However, these risks get lower as pirates learn how to filter out the undesired copies during searches.

Most unauthorised sources operate as platforms – based on openness and lack of top-down moderation of content (allowing for crowd-moderation instead). This is partially because the service owners are usually few and tend to protect their identities or avoid direct responsibility for the actions of the users. Indeed, some website owners claim lack of awareness of the existence of infringing content at all (see Manner et al., 2009). This allows the users from all over the world to upload infringing content, which is what drives the traffic to the websites. Instead of own moderation, the services often offer self-regulatory mechanisms (i.e. they crowdsource the regulation from the users themselves). For example, at The Pirate Bay the uploaded content can be verified by the community and automatically taken down when it is reported by many users. Moreover, uploaders also acquire ‘badges’ that inform about their own reliability. Finally, many file-sharing networks (torrents included) run by guidelines developed by the Warez scene underground. These regulations are developed by groups of anonymous uploaders and are regularly updated.³⁶ They include, i.a., detailed rules for naming content, the formats or descriptions used. Uploaders not conforming with these rules might find their uploads ‘nuked’ – i.e. rapidly downvoted or reported to the extent they get deleted (see e.g. Basamanowicz and Bouchard, 2011; Huizing and Wal, 2014).

However, these self-regulatory mechanisms are highly imperfect. Cuevas et al. (2013) found that in 2008-2010 app. 30% of the content at two major torrent websites was actually fake (i.e. different than the description). This share was driven both by malicious agents uploading primarily software files with malware and by antipiracy agencies conducting the so-called torrent poisoning – i.e. uploading large numbers of fake files (mostly masquerading as new movies or TV shows) aimed at making piracy a less convenient option (see e.g. Christin et al., 2005 for an analysis of how poisoning disrupts file-sharing). Importantly, fake torrents were responsible for app. 25% of the downloads.

Consumers are also discouraged from piracy when they consider the unauthorised content to be likely different than its description. Cox and Collins (2014) found that those who considered P2P

³⁶ See: <https://scenerules.org/> (accessed: 2019-03-14).

content to be ridden with misleading descriptions downloaded less unauthorised content.³⁷ To show this, the authors ran an ordered logit regression on piracy behaviour (measured by a categorical variable indicating how many music files or how many movie/TV series files the responders have downloaded), with the risk perception as an explaining variable. However, this relationship can partially reflect a two-way causality. On the one hand, those who perceive a higher risk of P2P will be less likely to download. On the other hand, those who have already downloaded a lot might be better informed or have learned how to mitigate the risks.

Table 7. Ordered logit regressions of perceived risks associated with P2P content

Risk of:	(1) Viruses	(2) Wrong descriptions	(3) Difficult finding	(4) Poor quality	(5) Malware
Music files downloaded					
	<i>(base level: none)</i>				
Less than 10 albums	-0.08	0.03	-0.14	-0.10	0.02
Over 10 albums	-0.20	0.14	-0.21	-0.22*	-0.13
Over 100 albums	-0.30**	-0.09	-0.56***	-0.46***	-0.33**
Over 1,000 albums	-0.62***	-0.26*	-0.84***	-0.69***	-0.59***
Movies/TV episodes downloaded					
	<i>(base level: none)</i>				
Less than 10 movies or TV episodes	-0.06	-0.04	0.11	0.11	-0.06
Over 10 movies or episodes of TV series	-0.39***	-0.25**	-0.21*	-0.04	-0.28**
Over 100 movies or episodes of TV series	-0.64***	-0.29**	-0.31**	-0.17	-0.42***
Over 200 movies or episodes of TV series	-0.87***	-0.65***	-0.54***	-0.42***	-0.73***
Frequency of P2P usage					
	<i>(base level: I have never used P2P)</i>				
Once every six months or rarely	-0.57***	-0.22*	-0.22*	-0.21*	-0.62***
Once a month	-1.03***	-0.79***	-0.89***	-0.71***	-1.15***
Once every two weeks	-1.17***	-0.89***	-1.06***	-0.83***	-1.29***
Once a week	-1.09***	-0.95***	-0.98***	-0.87***	-1.22***
Several times each week	-1.27***	-1.09***	-1.29***	-0.95***	-1.48***
Every day	-1.46***	-1.45***	-1.45***	-1.42***	-1.80***
Observations	5,409	5,409	5,409	5,409	5,409

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The explained variable takes the values from 1 – Disagree to 5 – Agree. The five dimensions included in the columns reflect statements about risks associated with P2P content: “The files downloaded from P2P file-sharing sites often contain viruses” (Viruses), “The files downloaded from P2P file-sharing sites often contain something else than the file description indicates” (Wrong descriptions), “It is difficult or more difficult to find files from P2P file-sharing sites than from legal stores” (Difficult finding), “The files downloaded from P2P file-sharing sites have often poor quality” (Poor quality), “The files downloaded from P2P file-sharing sites often contain malware” (Malware). All regressions include control variables for: gender, year of birth, education level dummies and income categories.

Source: own calculations based on the HIIT data (Hietanen et al., 2007).

To confirm this, the dataset used by Cox and Collins (2014) – the HIIT survey data (Hietanen et al., 2007) – is analysed. In particular, the perceived risks of fake descriptions are showed to get lower with piracy experience (consistently with the notion of handled risk of Bettman, 1973 – mentioned in section I.3.4.). I run a set of ordered logit regressions explaining the risk perception over five dimensions (see Table 7). The numbers of downloaded files (of movies and music separately) are included as explaining variables, along with a third variable that measures the overall frequency of P2P usage. The frequency variable focuses on current patterns of behaviour, while the download numbers reflect the aggregate behaviour over past years. Thus, controlling for the frequency of P2P

³⁷ Importantly, the two factors were aggregated with questions about potential risks of viruses and malware, but – interestingly – more people agreed with the statements of lower quality and bad descriptions than with the statements of malware risk.

usage allows me to filter out the relationship with the current attitude towards piracy and instead focus on the responders' level of piracy experience. Table 7 shows the regression results for each risk dimension. The frequency of P2P usage has a stronger relationship with the perceived risks than the numbers of downloads, but those also retain a significant relationship. Thus, a higher level of piracy experience is associated with lower perceived risks associated with P2P content, even when controlling for current behaviour.³⁸ This confirms that such risks can be considered switching costs.

Risk of malware

Acquiring content from pirate providers is also associated with risks of viruses and malware – both at the time of browsing and when downloading files. Importantly, these risks are also lowered with piracy experience and can be further lowered by installation of anti-virus protection.

Most sources of infringing content earn money through advertisements, which more often than normally include malicious ads – so-called malvertising. This might be partially because of the industries' fight against the ad revenue channels of copyright infringing websites forcing these websites to allow non-verified and shady ad-providers. For example, an EY (2017) report places the digital ad revenue associated with infringing sources at \$111 million in 2016, with a further \$102-\$177 million prevented by industries fight with the piracy ad revenue channels. A bit older report by DCA (2015) places the 2014 ad revenues at more than \$200 million. Moreover, DCA and RiskIQ (2015) estimates that in 2015 websites with infringing content generated app. \$70 million of revenue from the malicious content. NUS Engineering (2017) reports that in the Asia-Pacific countries much of the software obtained through illegal channels contains malware and that all of the websites with pirated software that they tested had suspicious ads and misleading links (often leading to malware).

Pirate sources are indeed much more likely to infect computers with malware or viruses. DCA and RiskIQ (2015) found that internet users were 28 times more likely to be infected with malware when visiting websites with infringing content than when visiting other websites. Notably, this pertained to malware not included in the actually sought content – 45% of it came from drive-by downloads (i.e. happened in the background while the visitor was browsing the website) and 55% from user-initiated downloads (e.g. by clicking at a misleading link or advert). However, traditional file-sharing requires you to save files to your hard drive, or even run an installation app. (especially in the case of software and video game piracy). These can be associated with further risks of infecting own computer with malicious software. Indeed, Telang (2018) exploited a panel data set of 250 internet users and found that as the users doubled the time spent on infringing sites the number of malicious files that they downloaded to their computers increased by 20%. Also, Bossler and Holt (2009) found that media piracy is one of the few self-reported online behaviours associated with increased risks of malware.

Previous research has confirmed a link between the perceived computer risks of piracy and actual piracy behaviour. Hennig-Thurau et al. (2007) analyse the relationship between the perceptions of a variety of costs and actual file-sharing behaviour. They show that German moviegoers who

³⁸ As a robustness check I have recalculated the regressions with a subsample of responders who reported using P2P to download or share at least several times a week. It is clear for this group that they are heavy P2P users, but they might differ in the length of previous experience. The results can be seen in columns (1)-(5) in Table A1 in Appendix A. In short, the relationship between files downloaded and risk perception remains negative, although it becomes less significant. I additionally conduct the regressions with an aggregate measure that equals the minimum level on a scale from 1 to 5 from both the music and movie download number categories. These regressions are reported in columns (6)-(10) and show much higher significance levels than those in columns (1)-(5), possibly because the movie and music download numbers are correlated (Cramer's V coefficient of 0.33).

considered sharing movies as risky for their computers were less likely to view pirated copies (though, notably, they were not less likely to obtain them). Similarly, Koklic et al. (2014) analysed the relationship between the perception of personal risk (to own computer) and piracy behaviour in Slovenia, Italy, Sweden and UK and found that the risk perception was connected to lower piracy levels and lower future intentions of piracy in each of these countries. Finally, Wolfe et al. (2008) found that the fear of getting a virus when downloading a CD affects individual intentions to pirate.

Importantly, the nature of the risk is temporary as the risks are easily omitted by experienced file-sharers. Through a series of interviews, Holt and Copes (2010) show that the persistent pirates acknowledge the malware risks. However, the interviewees also acknowledged that with experience the risk disappears, as file-sharers learn how to recognise the malicious or fake content. As one pirate under the pseudonym of Konink indicated for the study:

“I’ve seen enough to know who good resources are and when someone is posting something fake, plus you can actually see what types of files are in the torrent before you download. There are minimal things newbs [inexperienced pirates] wouldn’t recognize, but when you see it enough you just kind of know. (...)” – Holt and Copes (2010; pp. 639)

Finally, the regressions in Table 7 (columns 1 and 5) confirm that the perceived risks of malware and viruses decrease with piracy experience. As such, they can be considered switching costs.

Risk of low quality

Consumers also face the risk of lower quality of the content, when acquiring it from pirate sources. LaRose et al. (2005) found that people who believe that they will have difficulties finding what they want and that the downloaded files would be of poor quality reported lower downloading activity. Cox and Collins (2014) also showed that this is indeed the case (those who perceived such a risk were less likely to download unauthorised content). Finally, the regression in Table 7 (column 4) confirms that this risk gets lower with pirate experience.

Legal risks

Another crucial kind of risks associated with piracy is the risk of getting caught and penalised. In most countries around the world, downloading from unauthorised sources is illegal and considered copyright infringement. In reality, the enforcement of specific laws is often difficult and the actual risks are not very large. Still, the perceived risks are high enough to deter some of the consumers from piracy, while others decide on the setup of safety measures such as VPN to eliminate the risks.

The use of law to punish the pirates or deter the potential ones has evolved over the years. Sag (2016a) conducted a thorough study of the copyright litigation between 1994 and 2014 in the US, and later extended it to include 2015 (Sag, 2016b). Sag (2016a) notes some major changes in the litigation over the studied period. Specifically, he observes two spikes of “John Doe litigation” which are focused on targeting anonymous file-sharers. He describes the strategy as basically consisting of six key steps (as quoted from Sag, 2016a):

1. *“Observe the unlawful use of BitTorrent (or other similar filesharing tools).”*
2. *Identify the Internet protocol addresses of unauthorized downloaders.*
3. *File a John Doe lawsuit.*

4. *Seek a court order compelling Internet service providers to provide individual account holder information matching the Internet protocol address.*
5. *Contact account holders and threaten to seek very large awards of statutory damages.*
6. *Settle as many claims as possible.”*

Sag (2016a, 2016b) notes that the first spike in John Doe litigation focused on education and deterrence of the public, but the second spike was associated purely with monetizing online infringement. In a large majority of the more recent suits the subject of the matter is pornography (an increase from 70% in 2010 to 88% in 2014, and back to 68% in 2015). Moreover, the number of John Doe suits increased yearly (from 77 in 2010 to 2,930 in 2015), but the actual number of John Does (i.e. defendants) decreased drastically (from 43,124 in 2010 to 6,700 in 2014³⁹), with the suits increasingly targeting individuals rather than large groups. Finally, in 2010 the plaintiff with the highest share of John Doe suits was responsible for app. 13% of the cases, but by 2014 the top was taken by Malibu Media, LLC with a share of 81% of the cases (and of 68% in 2015). These factors mark significant changes in how the law is used against the infringers.

The volume of suits is low in a nationwide context, but some consumers perceive the risk as much higher. According to a rough calculation by Mokey (2009) the chances of getting caught for sharing music over the whole 5-year period of 2003-2008 were as low as 1 in 1,629. Moreover, the recent cases are majorly related to pornographic content and not cultural content in the sense of music, movies, TV shows or books. However, for the risk of punishment to act as switching costs, it is sufficient for it to be considered high and to affect individual behaviour. Indeed, the actual low risk of ending up in court may well constitute the temporary nature of the switching cost, if the consumers who started file-sharing learn that the risks are not actually high and can be further mitigated. Finally, the perceived risks of getting sued might be higher than the actual ones.

One reason for the perceived risks to be relatively high is that media tend to overpublicise about any acts of law enforcement towards file-sharers or industry lawsuits towards consumers. While lawsuits actually occur only for a handful of pirates, they immediately make headlines all over the internet – especially if the demanded damages seem disproportional to the offense or if the identity of the offender sparks controversy. For example, in 2012 a single mother in Minnesota was fined with \$220,000 of damages for having downloaded and shared 24 songs – a case that lasted for six years. At the start of the case and at its end, the story made headlines in: Computerworld, The Guardian, Goldstein Report, Manchester Digital, Macworld, Rolling Stone and many other outlets⁴⁰ including non-English ones⁴¹. In another prominent story, a dad in Germany was fined almost €1,000 in 2017 because his 11-year-old son downloaded an audiobook.⁴² Notably, file-sharing and responsibilities among family members in Germany spark much controversy and made headlines in more than one case (see e.g. Jones, 2017). Still, in yet another story, a 25-year old student of Boston University was ordered to pay \$675,000 for having downloaded and shared 30 songs (the fine was later reduced to

³⁹ A later study by Sag and Haskell (2018) shows that the number of cases fell to 1,362 in 2016, though the number of targeted defendants equalled 6,483.

⁴⁰ These and a number of different sources can be easily found by performing a search through the Google search engine of the phrase “\$220,000 woman minnesota songs” (conducted: 2018-06-15).

⁴¹ For example, it made headlines in Polish PC World, Dziennik Internautów and appeared on the first page of the printed Dziennik. The case and the three sources were described in Polish in a blog post by VaGla (2007).

⁴² See Ernesto (2017b).

\$67,500). The story circulated on the web but also made its way to TV (see a transcript⁴³ mentioning the student's TV appearance in CNN, 2009).⁴⁴ Thus, the consumers might feel that the risks are greater than in actuality. Indeed, some studies shown that media coverage affects public perception by overpromoting uncommon factors. For example, Rizzica and Tonello (2015) showed that additional media coverage of corruption in Italy, was associated with higher corruption perception and lower trust in justice. In a different context Mastrorocco and Minale (2018) found that a decreased exposure to TV channels with high levels of crime reporting alleviated individual concerns about crime. It also made the TV viewers concerns about crime more strongly rooted in reality. Thus, media coverage of the controversial lawsuits might increase perceived risks of penalisation for piracy.

Moreover, the 2010s saw the rise of the so-called 'copyright trolling'⁴⁵ whereas some companies (or agents) started to use copyright as a way of making money. In a landmark case in 2010, Righthaven LLS purchased rights to old news articles with the purpose of suing those who had already reproduced them without permission (Weiss, 2010). Copyright trolling involves filing lawsuits without the actual intention of going to the court. Instead, the copyright holders often prefer smaller and quick settlements. Copyright trolling is often associated with threats of higher fines if a case goes to the court and the settlement is not made. Reportedly, Righthaven LLS demanded as much as \$75,000 from the infringers but agreed to small fees instead of going to court (Polonsky, 2012). Finally, copyright trolling is often associated with pornography-related cases that additionally pressure the offenders to settle so as to not make the socially stigmatising case public (Rosen, 2013; Alderfer, 2014). Notably, many of the copyright trolling demands are dismissed by the plaintiffs themselves. The dismissals happen for various reasons, as reported by Andy (2014) who accessed a leaked report of Malibu Media stating the circumstances of dismissals, including insufficient evidence. Thus, the numbers of court cases might reflect the actual risks of being targeted by the profit-seeking copyright holders. However, this mass approach to litigation might increase the perceived risks of legal trouble.

Indeed, some consumers consider the risks of punishment as large enough for them to affect their piracy behaviour. The literature supporting this relationship is quite vast. Chiou et al. (2011) used a vignette study to show that college students in the US and Taiwan associated higher risks of getting caught for downloading with more negative attitudes toward piracy and lower intentions of downloading (at least in a hypothetical situation where they were assessing the point of view of a person in the scenarios). Chiou et al. (2005) also showed that the perceived risk of prosecution had a negative impact on the attitude towards downloading, in a sample of high-school learners in Taiwan. Similarly, Zhang et al. (2009) find that the perceived certainty of getting caught was negatively related to past piracy behaviour, though there was no relationship with the perceived severity of the potential punishment. On the other hand, Morton and Koufteros (2008) found a significant relationship with the perceived punishment severity among females, but not among males and not with perceived punishment certainty. Chiang and Assane (2008) also show that female students react more strongly to the perceived legal risks of piracy, though they find a relationship with individual behaviour for both genders. Many other studies point to a relationship with perceived legal risks, e.g.: Lysonski and Durvasula (2008), Wingrove et al. (2011), Borja and Dieringer (2016) for music

⁴³ The actual video can be found on YouTube but it is not cited here as the video does not seem to be uploaded with the knowledge of the copyright owners (CNN).

⁴⁴ Sag (2006) makes a case that pursuing such individuals (and not only heavy uploaders) might actually be a reasonable approach for the recording industry.

⁴⁵ The term 'copyright trolling' corresponds to an earlier term of 'patent trolling' that referred to an analogous pattern of behaviour in the context of patents.

piracy. Admittedly, Henig-Thurau et al. (2007) found no relationship between the perceived legal risks of movie file-sharing and actual behaviour, but the study is in minority in this regard.

Table 8. Ordered logit regressions of perceived legal risks associated with file-sharing

Risk of:	Punishment	Getting caught	Punishment (heavy users)	Getting caught (heavy users)	Punishment (joint)	Getting caught (joint)
Music files downloaded <i>(base level: none downloaded)</i>						
Less than 10 albums	0.25**	-0.20	0.41	0.29		
Over 10 albums	0.33***	-0.20	0.59*	0.28		
Over 100 albums	0.27**	-0.42***	0.45	0.01		
Over 1,000 albums	0.33**	-0.57***	0.47	-0.18		
Movies/TV episodes downloaded <i>(base level: none downloaded)</i>						
Less than 10 movies or TV episodes	-0.01	-0.05	0.03	-0.42		
Over 10 movies or episodes of TV series	0.05	-0.16	-0.17	-0.51		
Over 100 movies or episodes of TV series	-0.05	-0.19	-0.37	-0.63*		
Over 200 movies or episodes of TV series	0.06	-0.29**	-0.28	-0.70**		
Frequency of P2P usage <i>(base level: I have never used P2P)</i>						
Once every six months or rarely	-0.69***	-0.18			-0.54***	-0.27**
Once a month	-0.89***	-0.36**			-0.74***	-0.45***
Once every two weeks	-0.80***	-0.30*			-0.66***	-0.43***
Once a week	-0.94***	-0.36**			-0.80***	-0.49***
Several times each week	-1.01***	-0.42***			-0.87***	-0.57***
Every day	-1.23***	-0.60***			-1.07***	-0.74***
Minimum level of downloads <i>(base level: no music files and no TV episode files downloaded)</i>						
At least "less than 10 albums" and at least "less than 10 movies or TV episodes"			-		0.08	-0.23**
At least "over 10 albums" and at least "over 10 movies or episodes of TV series"			-		0.20**	-0.28***
At least "over 100 albums" and at least "over 100 movies or episodes of TV series"			-		0.12	-0.50***
Over 1,000 albums and over 200 movies or episodes of TV series			-		0.20	-0.73***
Observations	5,409	5,409	2,251	2,251	5,409	5,409

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The "Punishment" explained variable takes the values from 1 – Disagree to 5 – Agree and refers to a statement "I can get caught and punished for using P2P file sharing sites". The "Getting Caught" explained variable takes values from 0 to 6 and indicates the number of actions that the responder indicated as associated with lower probability than the probability of getting caught when file-sharing through P2P. The actions in the survey were: "getting caught shoplifting", "getting caught free riding on public transportation", "getting a parking ticket", "winning the jackpot in lottery", "getting caught speeding" and "getting caught not paying television licence fee". Thus, the number of the indicated actions reflects the relative perceived risks of getting caught, associated with file-sharing. All regressions include control variables for: gender, year of birth, education level dummies and income categories.

Source: own calculations based on the HIIT data (Hietanen et al., 2007).

The perceived risks of prosecution decrease with experience in file-sharing. Zhang et al. (2009) find that the relationship between perceived certainty of punishment and piracy behaviour is actually driven by digital piracy self-efficacy, whereas those who find it easier to commit piracy also tend to perceive the risks as lower. The HIIT survey data also support these findings. I run similar ordered logit regressions as in Table 7, on variables associated with perceived legal risks. Interestingly, the data indicates no specific relationship between the perceived risk of punishment and experience in downloading (the estimate indicates lower perceived risk of punishment among those who never

downloaded music files, but no consistent differences among those who downloaded some files). However, the data also shows a clear relationship between the level of experience and perceived risk of getting caught. As before, the results are also replicated for heavy P2P users only and for joint categories for numbers of music and movie files ever downloaded (Table 8).

The listed risk costs might be considered at least partially as temporary and can therefore act as barriers. The risks of uncertainty can be quickly overcome once the consumer learns how to navigate the file-sharing networks in a way to avoid malicious content and to only use the verified, safe websites. Similarly, much of the perceived risk of penalisation can be reduced once the consumer realises that there were no repercussions for the first acts. Finally, if consumers decide to protect themselves (e.g. by using VPN services), the actual risk gets severely diminished.

III.4.1.2. Evaluation costs

Consumers switching to unauthorised sources need to find a suitable source for their content. Depending on the type of the good, these can include file-hosting websites, torrent-hosting websites, streaming websites, or stream-ripping websites, etc. Some may find it preferable to use stream-ripping software or plugins instead. The decision may not be obvious and also depend on the available catalogues, size of the associated community (networks), the amount of (suspicious) adverts, existence of other requirements (e.g. registration, fees) or quality of the content.

A significant part of pirate traffic comes from internet searches, especially among the less experienced pirates. According to a report by MUSO (2017), approximately 35% of the traffic to file-sharing sites comes from internet searches. This suggests that indirect searches are a constant part of using the pirate channels. Notably, some reports claimed that the share is actually lower – app. 15% (Masnick, 2011; Google, 2016). However, these numbers often focused on the most known infringing websites (like the notorious Pirate Bay), which might be memorable enough to skew the results in favour of direct traffic. Moreover, these results look at the pirate population in general, neglecting the importance of search tools for learning pirates. Indeed, a report by Millward Brown Digital (2013) suggests that in 2010-2012 the first-time pirates were twice as likely as repeat pirates to have found content by using search engines. The first-timers were also much less likely to use direct entry to websites with unauthorised content (i.e. going directly to a particular URL address). Similarly, SARI (2018) report shows that 70% of first-time pirates in Australia use search engines to discover unauthorised sources. This proves that those switching to the unpaid channels incur search and evaluation costs before sticking to any particular source.

The search costs associated with pirate sources have gone up in the recent years with some countries and service providers taking active measures to make access to infringing websites more difficult. For one, the largest search engine (Google) downranks unauthorised sources in its search results. Ernesto (2014) documents that torrent site owners confirmed a drop of traffic following the introduction of Google downranking. In fact, Google claims that demoting a file-sharing website results on average in an 89% drop of visitors going to that site from Google Search (Google, 2016). Sivan et al. (2014) also show that the placement of authorised and unauthorised sources in search results might significantly affect the users' choices and the SARI (2018) report also supports this. Moreover, some countries started actively blocking infringing websites. Danaher et al. (2016) showed that the website blocking in the UK greatly decreased piracy levels and increased sales. Similarly,

INCOPRO (2018) found a large decrease in traffic to infringing websites following the blocking in Australia. Undoubtedly, these measures are especially effective for the first-time pirates with no prior experience in circumventing blocks and little knowledge of the unauthorised alternatives.

III.4.1.3. Learning costs

In the context of the unpaid channels, the learning costs are closely connected to the previously described switching costs associated with risks. This is because learning by doing decreases some of the perceived risks of piracy (see section III.4.1.1.). Still, some learning costs stand out on their own.

Acquiring content from pirate providers may involve learning about the technical particularities of file descriptions or file-sharing itself. For example, it involves learning how to recognise high-quality content based on parameters such as resolution, bit rate, compression technology or based on the file formats and sizes. They also involve learning how to discern the actual content from fakes or mislabelled items. Some sources might also require learning about how the networks operate (e.g. the seeders and leechers in P2P networks) and how to effectively search for content. Additional learning might be required to use specific file-sharing related software (e.g. the μ Torrent for torrents or stream-ripping apps) or media playing software (e.g. media players like VLC or Winamp) or even how to search for complementary content like correctly synchronised movie subtitles.⁴⁶

Previous research supports the notion that some learning-by-doing exists among unpaying consumers and that the level of know-how is related to the consumption behaviour. Hennig-Thurau et al. (2007) showed that the individual search costs (defined as the perceived level of cumbersomeness of downloading through file-sharing networks and copying from others) are also associated with less individual downloading. Indeed, Brynjolfsson et al. (2004) showed that in a legal setting of an online comparison-shopping service, consumers incur significant costs when browsing through the search results. Importantly, Hennig-Thurau et al. (2007) also showed that the search costs in the file-sharing context are greatly lower for those with larger file-sharing experience. Table 7 in section III.4.1.1. (column 3) shows that learning-by-doing decreases some of the risk costs and also decreases the perceived difficulty of searching for content at pirate sources. Finally, numerous studies found some association of computer or internet proficiency with acts of piracy (e.g. Zentner, 2006; Andersen and Frenz, 2010) or with intentions to participate in piracy (e.g. Phau and Ng, 2010

⁴⁶ As an example of why learning costs are much different for authorised and unauthorised sources, consider a case of a movie consumer and the Netflix streaming service. Netflix offers guidelines for usage, a user-friendly interface and data-driven recommendations. This is because Netflix competes with other services and has the incentive to be as alluring as possible. Moreover, Netflix uses its vast amount of data to optimise its users experience. Once a person registers, they only need to click on a specific movie title, and then – if need be – switch on the subtitles or change the language. The movie will load automatically in a highest available quality – based on the subscription type and current connection speed. On the other hand, a person wanting to download the movie through torrents would have to first enter a specific torrent-hosting website and search for the title, while assessing the results of the search. In principle, the user would need to filter out the files with few seeders (sharing people), low quality, potential fake labelling or viruses and unwanted audio languages. They would then have to put the file (or magnet link) to their software of choice that performs the actual file-sharing. Finally, when the file is downloaded, they would sometimes need to enter a different website to find subtitles that match the specific version of the movie they downloaded (these can differ based on compression methods). Additionally, if the user wanted to minimise legal risks, they would also need to incorporate some kind of privacy protection like a VPN channel. All these additional steps require some degree of learning. Obviously, an unauthorised streaming service or a Kodi box might be a more relevant reference to Netflix. Indeed, this would eliminate some of the learning costs (e.g. on how to operate software), but not all. Learning how to search, avoid viruses or low quality content and to protect privacy would still remain.

for software; Phau et al., 2014 for movies; Hinduja and Ingram, 2009, Holt and Morris, 2009 or Popham, 2011 for music; Taylor et al., 2009 for music and movies) or an association between the perceived ease of acquiring unpaid content and the intentions to download (e.g. Cronan and Al-Rafee, 2008). Digital skills are clearly related to how difficult it is to learn using the unpaid channels. Thus, learning constitutes a switching cost with its extent moderated by digital proficiency.

Some of the learning costs are associated with learning about the techniques of ensuring own anonymity. Larsson, Svensson, de Kaminski, Rönkkö and Olsson (2012) found in a survey of The Pirate Bay users that the more frequent file-sharers are more likely to use VPN protection, while most of other file-sharers would like to improve their anonymity. This partially explains the results from Table 8 in subsection III.4.1.1. showing that the more experienced file-sharers perceive the risk of getting caught as lower. Moreover, Larsson, Svensson and de Kaminski (2012) showed that the usage of anonymity services has increased between 2009 and 2012 among Swedish file-sharers. Finally, there was a significant increase in the usage of online anonymity services among Swedish frequent file-sharers, directly after the Intellectual Property Rights Enforcement Directive was implemented in Sweden (Larsson and Svensson, 2010). These findings highlight that anonymity is an important issue for file-sharers, but that ensuring it (e.g. through the use of VPNs) is not straightforward.

III.4.1.4. Setup costs

The setup costs are well-documented in the non-piracy-related research studies of switching costs. The setup costs in the context of piracy relate to the same kind of effort as associated with switching to a new legal provider, with the potential difference of the scale of such costs. For a legal provider of content, the setup costs might require registration and/or software/app installation. For an illegal provider, the potential costs include: registration at websites or forums, installation of software required to acquire the content (e.g. μ Torrent for torrents, browser plugins or other apps for stream-ripping, media players for downloaded content), establishment of VPN protection (another registration and software installation) or anti-virus protection (software installation).

III.4.2. Financial switching costs

III.4.2.1. Benefit loss costs

Some of the benefit loss costs typically used in competition between legal providers do not relate to the competition with the pirate ones. For example, when switching to pirate sources one might lose discount benefits, but that is obviously offset by the fact that the piracy channel is free.

However, some types of goods include identifiable non-financial benefits relevant in this context. For one, some providers offer continuous support to their customers. A very relevant example might be that of software or video games. A consumer can purchase a game at a digital platform (for example STEAM), which then allows them to download the game from the client software. At any time, the game publisher issues a patch update that addresses errors in the game code or new features and expansions, the game owner can simply update their game through the client or even from the in-game menu itself. However, such auto-update systems typically require for the video game to be a registered, authorised copy. As such, an owner of a pirate copy might find difficulties with similar updates. For one, as they download the game, they also often need to download a crack (a file that allows to bypass the game's Digital Rights Management system). Afterwards, whenever an update,

patch or expansion is released, they would need to download it from an outside source and often again apply a newer version of the crack. Moreover, some software or video game producers offer support in case of technical issues but also only if they can identify the specific copy as a legal purchase. Similarly, some software might offer a direct support in the form of a support line for customers, unavailable for unverified users. Also, some services like mobile apps have the advantage of distribution through the official app store channels, while any similar apps for unauthorised content would be taken down and difficult to install. In these examples the authorised providers provide non-financial benefits in the form of convenience-of-use and direct support.

Moreover, some producers include additional incentives for the purchasers. Examples include access to forums, forum badges, or special achievements tied to the platforms used for accessing content. For example, Hamari (2017) showed that gamification of a service in terms of adding a ‘badge’ system, might increase user engagement. Many crowdfunding platforms focus on providing the backers or patrons with access to restricted content like posts and updates viewable only by backers. While the content of the updates might be easily shared beyond the platforms, the backers often also gain the ability to comment on the product and interact with the creators themselves. This provides the paying customers with potential influence on the creative process.

Finally, the authorised providers can offer services that are by definition non-replicable by the pirate providers. The large platforms like Spotify or Netflix take advantage of the network effects and the data at their disposal to provide accurate content recommendations. This kind of service enhances the experience of users, as the algorithms can introduce consumers to previously unheard of creators who match their tastes. Sinha and Mandel (2008) found that in hypothetical scenarios, responders would have higher willingness to pay for using a service with a recommendation engine. Similarly, Dörr et al. (2013) showed that music pirates who tend to search for music recommendations on the internet have better attitudes toward services like Spotify. On the other hand, infringing websites cannot track their users’ behaviour without effectively discouraging them from usage. Hence, switching from a legal provider to a pirate provider might cause an important loss of the recommendation system and user experience benefit.

III.4.2.2. Monetary loss costs

Monetary loss costs are rarely attached to the pirate provider. Typically, monetary loss costs could be associated with the purchase of a device necessary for the consumption of the associated products (e.g. PCs, video game consoles, e-readers, etc.). However, such devices typically allow for the consumption of both authorised and unauthorised media. One possible exception are the “Kodi” boxes, whenever they are purchased with the aim of accessing unauthorised content. In such cases, the cost of buying a box would be considered a monetary loss cost – a one-time cost necessary to incur, though not directly related to the product (movies and series) itself.

III.4.3. Relational switching costs

Relational costs might be especially prevalent in the pirate/legal provider context, where switching to the former is associated with the violation of law and potentially of social norms. Burnham et al. (2003) distinguished two facets of these costs.

III.4.3.1. Personal relationship loss costs

Personal relationship loss costs are typically associated with people that the customer interacts with, like the current provider's employees. However, in the digital context these costs could be associated with the community of users of a particular service or with content creators. While it is difficult to exclude someone from an online community, cases might involve the customer-restricted forums or discussions (see Section III.4.2.). In such cases, switching to pirate providers would be directly associated with cutting the means of interaction with a group of fans, as well as with the creators themselves. Park et al. (2009) show a variety of reasons to belong to Facebook groups, including the need to socialise and be a part of community, as well as self-status seeking (e.g. the feeling of pressure to belong). Similar reasons might prevent the paying consumers from abandoning their access or sense of belonging to online fan communities. Hampton-Sosa (2017) shows that music streaming services can lower the piracy intentions by including community building features.

Moreover, the social norms and the attitudes of family and friends might affect the retention in paid channels. In particular, research has linked switching to piracy with social risks and moral stigma. For example, Tan (2002) showed that persons who believed that their family, relatives or associates would look down on them or lose their respect if they found out that the person bought pirated software, had lower intentions to do so. Peace et al. (2003) combine three factors related to subjective norms, with two of them describing beliefs that people important to the responder would look down or disapprove of them committing software piracy. They find significant negative relationship of those beliefs with the intentions to pirate. Similarly, Jeong et al. (2012) defined moral awareness risk as a combination of social risk factors (belief that a responder would lose social status if family/friend found out about music downloading) and psychological risks (downloading from pirate source causing tension, damage to self-image, etc.). They found that it is very strongly related to individual piracy and also that the perceived overall risk associated with piracy does not increase with the amount of content pirated – suggesting a fixed risk cost that might act as a barrier. Many other studies show the importance of subjective norms, though they often combine items that refer to one-time costs (e.g. loss of status or respect) with items that refer to costs taken into account with each pirate download (e.g. friends think it is wrong) – e.g. Levin et al. (2007), Yoon (2011).

III.4.3.2. Brand relationship loss costs

The key difference between the paid and unpaid channels would rely on the providers utilising their legal context to increase fan engagement and loyalty to the brand. Indeed, artists and companies are much more likely to run an official Facebook page or a Twitter channel than owners of unauthorised services who need to maintain their anonymity. This is reinforced by the fact that the customers also cannot use the official channels to talk about the unauthorised use without risking detection.⁴⁷

Some of the research studies found no relationship between the attitudes towards artists/industry and piracy intentions. Chiou et al. (2011) found no relationship between being a fan of an artist and the attitudes and intentions regarding downloading their songs. However, their study asked students to read scenarios about another person – Allen, identified as a fan of Linkin Park (in some scenarios) and to answer about the attitudes and intentions from his point of view. Such framing raises

⁴⁷ In a related and telling case, FBI launched an investigation against Facebook user who uploaded a copy of the Deadpool movie to the social media platform. This ended in an indictment and a guilty plea (Ernesto, 2018c).

concerns that the students found it difficult to relate to Allen, especially if the responders had other feelings regarding Linkin Park. Wingrove et al. (2011) found no relationship between the individual respect for the music industry and piracy frequency. Also, Lysonski and Durvasula (2008) found no relationship between downloading and the beliefs about its impact on artists and the industry. Part of the study of Lysonski and Durvasula (2008) and the study of Wingrove et al. (2011) ask about the music industry as a whole and the music industry is often perceived as not representing the artists and only business interests.⁴⁸ This might translate into a much lower responder attachment.

On the other hand, many research studies show that feelings and attachment toward artists as well as fan engagement are significantly related to both pirate and purchasing behaviour. Chiou et al. (2005) found a relationship between idolisation and attitude and intention of purchasing pirated CDs and a relationship between the perceived proximity with an idolised artist (i.e. the feeling of responsibility regarding any negative impacts) and the intentions of downloading their music. Frick et al. (2014) show that user engagement and artist broadcasting are positively related to sales but that user engagement is negatively related to piracy. Similarly, Turri et al. (2013) showed that affective commitment to an artist (e.g. emotional attachment) is connected both to a higher purchase loyalty and lower intention toward digital piracy of this artist's music. Chen et al. (2015) show that personal (rather than automated) posts by artists at a once-popular social media platform MySpace had a positive effect on sales. Henig-Thurau et al. (2007) show that moral costs defined as beliefs that file sharing is unfair to the filmmakers, unethical and harmful (three aggregated items), negatively affect both the downloading behaviour and the subsequent consumption behaviour of the downloaded content. Finally, Krawczyk et al. (2014) found that piracy behaviour is judged as more unethical when it concerns a TV series created by a friend of the perpetrator.⁴⁹ This indicates that a higher level of interaction with the artists might strengthen the relationship between the user and the provider, which translates into both a higher propensity to purchase and a lower to download without paying.

III.5. Empirical evidence on piracy – summary

As creative industries entered digitalisation, they have been challenged by the unfair competition from pirate sources. Chapter II described how the distribution of content has changed since the beginning of the XXI century and what was the role of piracy. However, it is still debated how much piracy itself actually displaces in terms of industry revenues – if anything. To provide background for an analysis of the comic book market, this Chapter summarised the available empirical evidence.

The empirical research mostly finds negative effects of the unauthorised consumption on sales. However, research is largely limited to the music and film/TV industries, with few studies on other industries. Moreover, in the existing studies, the types and formats of content tend to vary greatly, with the effects often depending on the specific channel, timeframe, title characteristics. With the ongoing changes to digital markets, this means that it is difficult to extrapolate the existing knowledge to other industries. It also shows that the research on the effects of piracy demands continuous extensions that acknowledge the changing digital market, as well as encompass other

⁴⁸ For example, there exists a mock website claiming that the Motion Picture Association of America (MPAA) and the Recording Industry Association of America (RIAA) merged to form the Music And Film Industry Association of America or MAFIAA. The website describes how the organisations supposedly decided to stop pretending that they care for artists. The website has been established in 2006 and is still online as of 2018-07-19: <http://mafiaa.org>.

⁴⁹ For more detailed analysis of some of the data used in the study see Hardy et al. (2013).

types of content, formats and distribution channels. As such, Chapter IV proposes a new study to provide first estimates of the effects of piracy for the American comic books.

Importantly, empirical research identifies tools for customer retention in the form of switching costs. While switching costs have been typically used to understand competition between legal providers, they can be also leveraged to decrease the appeal of pirate channels – decreasing the outflow of consumers. One set of tools focuses on increasing consumer loyalty by means unavailable to the pirate suppliers, while another on decreasing the attractiveness of the pirate channels themselves.

Table 9. Switching cost types and associated anti-piracy strategies – summary

Switching cost		Anti-piracy strategies
Procedural switching costs		
Economic risk	Risk of fake content	Torrent poisoning and deletion of actual infringing copies
	Risk of malware	Suppressing legitimate advert streams
	Risk of low quality	Deletion of high quality infringing copies
	Legal risks	Copyright enforcement
Evaluation costs		Blocking/downranking infringing sources, removing autocomplete in search engines
Learning costs		Data-informed user friendliness and recommendation algorithms
Setup costs		-
Financial switching costs		
Benefit loss		Increasing customer benefits and user experience and content recommendation
Monetary loss		-
Relational switching costs		
Personal relationship loss		Increasing consumer loyalty and relationship with the creator
Brand relationship loss		Increasing brand loyalty and brand relationship

Source: own elaboration based on concepts described in Chapter I.

Based on the previous literature, the legal providers and governments might use several strategies to increase the switching costs related to switching to pirate channels. They can increase the risks associated with piracy by actively polluting the available content in unauthorised sources, hampering ad stream revenues (forcing the pirate providers to allow for malicious adverts), deletion of infringing content when possible, and law enforcement on infringers. Moreover, switching costs might be increased by increasing the difficulty of finding a pirate source and using it, e.g. by website blocking, or downranking in search engine results. The legal providers have a unique advantage in the form of access to vast amounts of data – allowing them to use it to increase user experience and content recommendation algorithms. They can use it to provide additional benefits in the form of better service to their customers. Finally, the legal providers can invest in increasing brand awareness and relationship between the consumers and both the brand and the creator. Interactions and community-building around the product might further increase the switching costs to piracy.

Still, the exact array of measures affecting switching costs depends on the considered source of piracy and type of content in question. Different switching costs apply to torrent-hosting services than to streaming services than to Kodi-like boxes than to content accessible directly through browsers. Similarly, different measures can be targeted to video game players than to music listeners or TV viewers. Depending on the scale of switching costs, consumers of specific products might perceive lower or higher switching costs associated with the illegal alternative.

The various forms of switching costs that apply in the context of competition from piracy provide important context to the discussion in Chapter V. The main aim of their description here is to provide a plausible assessment to the current advantages and disadvantages to piracy in the comics market.

Chapter IV: American comic book market in the XXI century

Just like other creative industries, comic books have entered the digital age and faced the full array of challenges associated with digitalisation. First, comic books themselves became digitised, meaning that their production costs became lower, creative process more decentralised⁵⁰, and distribution more efficient. This means that comic books acquired a new lightweight format for usage with mobile devices such as smartphones and tablets, which is available at an instant and entails no costs for additional copies. It also means that it became easier for new artists and creators to enter the market with their own art. Second, online retail shops emerged, facilitating a much larger access to titles – including less popular ones and archived issues. This advent is additionally important as the comic books distribution was previously largely limited to local specialty stores with limited shelf space. Third, digital intermediaries entered the market with the sole focus on facilitating easy distribution channels for licensed content. These digital services introduced their own mobile apps that allowed easy access and user-tailored experience of reading. At the same time, internet introduced new ways of monetising comic book art – in the form of advertisements or patronage. Fourth, with the introduction of digital formats, high-quality piracy of comic books became effortless. Comic books are easily accessible directly through internet browsers or in downloadable formats.

Despite all this, the American comic book industry has seen growth across all of its channels in the XXI century. The print formats have evidenced growth despite the entrance of digital formats which also contributed additional revenues. The number of comic book specialty stores has increased, while comic books also expanded to chain stores and online retail. The long tail of less popular titles has grown, but the growth can be also observed for the top publishers who retained their dominant market shares. Web comics have emerged, whose readership is not reflected in sales estimates as their revenues typically come from, e.g., advertisements. Significant shares of comics readers admit to having read pirate copies, but whether this reduced the paid consumption remains unclear.

However, the digitalisation of the comic book market has received much less attention among the scholars than other creative industries. There is only limited knowledge on how the comics market was affected and what contributed to its growth. It is also unclear whether the digital and unpaid distribution carried any disruptive effects for the comics as they did for other industries.

This case study dissects the changes that took place in the American comic book market and collates data from numerous sources (including industry conferences and white papers, distributor and publisher reports, convention, store and publisher surveys and many other) to provide a meaningful discussion of the processes underlying them. Moreover, it collects new unique data from a panel of comic book readers that serve to provide new insight into reading habits of comic book readers, their consumption of comics-based media and the relationship of paid consumption with piracy. It thus provides a first estimate on the effects of piracy on the American comic book market.

⁵⁰ Norcliffe and Rendace (2003) provide a detailed analysis of how comic book production changed with the advances in ICT. The production of a comic book typically involves a number of specialists, including the writer (who provides the narrative, plot and general design), the penciler (who produces the first frames with pictures), the inker (who inked the details and final outlines), the letterer (who wrote the dialogues into the speech balloons) and the colorist who painted the final pictures. These people had to work in close cooperation with the editor and often among each other. As such, pre-1980 the typical model of production provided a 'bullpen' whereas all the specialists would work in the same location to ensure a smooth process. The post-1990 model changed this, as new technologies allowed for quick and easy communication over distances and decentralised the production process. Currently, the specific specialists often work from homes and only gather, e.g., during comic book convention where they engage with fans.

Section IV.1 provides a more detailed look at the characteristics of the American comic book market and how it evolved in the XXI century. Sections IV.2 and IV.3 describe the results of a new study on comics readership, based on newly collected data. This chapter focuses solely on the American comic book market, while the next chapter of this thesis then places these findings in the context of Chapters I-III and compares the outcomes for the comic book market with those of other creative industries – highlighting the key differences in the American comic book market.

IV.1. The comics market and how it changed

A long-time industry expert and insider Milton Griep (MacDonald and Reid, 2016) named four disruptions that took place within the comic book market in the last 50 years. First was the emergence of comics stores in the 1970s that took over newsstand sales and led them to gradual disappearance. Second was the shift to online retail in the 1990s. Third was the rise of manga graphic novel sales in traditional book channels in the late 1990s. Finally, Milton Griep names digital comics sales as the fourth disruption that emerged in the 2000s.

Another industry expert, John Jackson Miller (Miller, 2005) wrote of a market that largely collapsed on itself in the 1990s. Between late 1980s and early 1990s the comic book market became proliferated with speculators, looking for rare and unique titles. This speculator boom emerged from the fact that early comic book titles were often highly priced in the current market due to their high collector value. As such, the comic book market attracted speculators both within its reader community and from outside of the industry. Responding to this new type of demand, publishers started issuing ‘special’ variants of their comic books, with unique cover or colour variants. At the same time, technology pushed the comic book industry forward allowing for cheaper production at a larger scale. Whereas the old comic books have become valued for their rarity, the market became flooded with new titles in different variants appealing to speculators who often had no real knowledge on the industry. As the publishers were at the height of their production, the speculator boom came to its end, leaving the store owners and publishers with vast amounts of unsold titles. This outcome combined with the 1994 hike in paper prices sent many of the publishers and stores into bankruptcy (including Marvel who filed for bankruptcy in 1996).

However, despite the collapse of the 1990s and the subsequent entrance of online retail, the sales patterns in the XXI century show a comic book market in growth on each front. It is difficult to predict how these patterns would differ in the absence of digitalisation, as factors such as globalisation, diversification, promotion from comics-related media also affect the sales. Moreover, the digital sales are difficult to track as most online services do not report their sales. In principle, it is unclear whether a digital disruption actually took place, as the comic book market has undergone a number of gradual changes, with revenues from most channels actually increasing.

This section serves two goals. First is to describe the shape of the American comic book market, the formats, distribution channels, market shares, publisher strategies and readers. Second is to show how these characteristics changed and what were the underlying shifts that might have driven it.

IV.1.1. Comic book formats

The comic book market is highly diversified in terms of formats. Two formats with longer traditions are the short-form comic book issues and the long-form graphic novels (which can be further

described by several categories). As digitalisation progressed, both of these formats gained direct digital counterparts. Moreover, the evolution of web created new revenue channels and allowed for webcomics to appear, taking form both of short strips and longer formats.

Print formats

Comic book issues dominate the North American market in terms of units sold. This format constitutes app. 24-page issues typically released in regular intervals (e.g. twice a weekly or biweekly). These short episodes usually form larger series following a plot unfolding over more than one episode. Within this format, one can discern between popular ongoing series (e.g. “Action Comics” series by DC had its 1002nd issue released in August 2018) or mini-series that might comprise of several issues and are sometimes tie-ins to larger series.

Graphic novels dominate the North American market in terms of revenues. Graphic novel is an umbrella term for book-length formats – often in hardcover – filled with comics strip. The graphic novels themselves also tend to vary in their type. They include standalone stories, episodic long-format stories, as well as comics issue collections, whereas comic book publishers tend to release a ‘volume’ once every six issues or so, comprising the most recent several issues of a series. Some graphic novels comprise collections of comics stories from several series, typically on some larger related topic (e.g. ‘essential’ or ‘classic’ stories on one superhero character).

Digital formats

Digital formats of comic books have been around from late 1990s, but entered a larger scale of distribution only in 2007 (with the entrance of ComiXology and Marvel Digital Comics Unlimited – see Section IV.1.2.). The new format had the advantage of no costs of ink and paper and of direct to consumer distribution. From a consumer perspective, the new format also meant that no shelf space was needed to collect full stories. While digital formats typically offer the same content as print issues and print graphic novels, but also provide additional reading facilities. Many digital comics sellers provide their own reader apps that manage comics sales and user libraries as well as facilitate reading. For the latter, apps often allow for customization of the experience and include features such as Guided View. Guided View allows to read comics frame by frame, with the app specifically tailoring the frame to the screen size. As comic book frames tend to come in irregular formats, the Guided View typically shows both specific fragments of a frame (e.g. with text balloons), as well as the whole frames and whole pages. Users are allowed to configure options such as whether reading a page should begin/finish with the view of the whole page or whether the frames not currently displayed should be blacked out or shown at the margins of the screen. On the downside, the need to code what exactly should be considered a frame instills additional production costs, especially if the frames come in irregular shapes. However, these costs are incurred only once per any comic book. As digital formats allow for different approaches to design, some creators began to experiment with interactive (see Screendiver) or partially animated comics (or ‘motion comics’) as well.

Most comic book issues are simultaneously released in both print and digital formats. Moreover, most digital comic books are initially priced on par with their print counterparts. This setting might seem surprising as publishers often distribute digital copies as a bonus to print. However, it is of note that digital sales through ComiXology entail an additional fee that goes to the distributor. Moreover, up until 2014, any purchases made in-app on mobile devices with the Android or iOS systems implied an additional cut for Google or Apple, respectively. In 2014, ComiXology discontinued its support for

in-app purchases, requiring purchasing directly through the web service (Rosenblatt, 2014). The exact profit that a publisher gets on a sale might depend on the way the digital copy is sold.

The emergence of digital intermediaries such as ComiXology also created the potential for self-publishing. As such, there are now titles that are only published in a digital format, although ComiXology does include a print on demand option. More importantly, ComiXology has also started their own line of ComiXology originals – digital format comic book series that are exclusive to the platform. Interestingly, some of the series are released with all issues simultaneously – allowing for binge reading. The exact size of this new market is however unknown, more so as it has only just launched (it was announced in June 2018) and that it puts emphasis on the comics being available as part of ComiXology and Amazon subscription packages (Allen, 2018).

Webcomics

As internet evolved it gave rise to other forms of comics as well. These include various web-comics, often in the form of short comedic strips (in a way, heirs to comics strips that populated various print news magazines like *Garfield* or *Dilbert*) or full-length comics stories released mainly on creators' websites in a periodic manner. The latter often come on a page per week (or other fixed time period) basis and do not follow the standard issue-length format (although they are sometimes later released as graphic albums). These formats are interesting in themselves, as they have largely emerged from Culture 3.0 and the co-creation facilitated by easier access to tools, audiences and monetisation. Most of the online-based comic book creators make large use of social media to promote their content and engage with their audiences. While some also publish print books of their art, the content is first made available free online and the profits come from, e.g., advertisements, merchandise or donations (for example, some creators maintain *Patreon* profiles to collect voluntary donations from their fans).

As webcomics are by definition decentralised and their revenue streams diverse, there are no reliable estimates of the size of this market. The available evidence (e.g. in the form of small sample surveys – Harper, 2015a) suggests that most webcomics creators do not earn enough from their comics for the comics to be their only occupation (only app. 20% do, and more than 70% of the surveyed webcomics creators earned less than \$12,000 yearly). Patronage (e.g. through the *Patreon* service) seems a popular channel for comics creators, with *Patreon* claiming that Comics has always been among the top 5 largest categories of content (and it is growing – Church, 2016). On March 19, 2019, 5,083 *Patreon* creators in the comics category earned approximately \$550,000 to \$700,000 on a monthly basis.⁵¹ On average, this amounted to app. \$122 per month per creator, with only app. 130 of the creators earning more than \$1,000 monthly. Additionally, 887 creators earned a total of close to \$50,000 on a 'per creation' basis (e.g. per comics pages, chapters or artwork).

Changes and other comic book markets

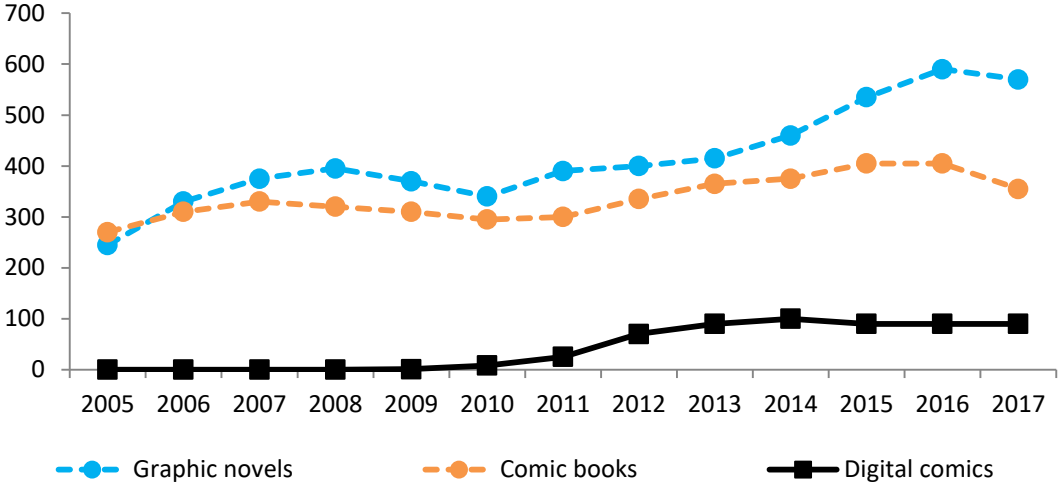
Unlike the music industry, the comic book market experienced almost continuous growth in the XXI century. According to the combined estimates of Comichron and ICv2⁵², the revenues from comic

⁵¹ Based on data scraped from Graphtreon. Graphtreon is a service collecting and aggregating data from *Patreon*. Some creators opt for hiding the total contributions (app 2% of the creators, typically with large numbers of patrons). Graphtreon reports estimated ranges of their profits based on comparisons with other creators with similar numbers of contributors.

⁵² Comichron collects data from reports shared by Diamond Comic Distributors, who are responsible for the vast majority of distribution of American comic books across the comic book specialty stores. Among others, they hold exclusive rights for distribution to comic book stores for the two largest American publishers – DC and Marvel. ICv2 is a website providing

books doubled from 2005, reaching more than one billion for the first time in 2015. This growth was mainly driven by the increase of revenues from graphic novels. The print issues revenues have increased somewhat over that time. Moreover, the 2010s saw the entrance of digital formats that quickly grew to app. 90 million USD of revenues. However, after the two-year growth of this channel, digital revenues have remained fairly stable for years 2012-2017. This means that on average in 2017, per capita expenditures on comic books equalled app. \$3.12 (\$1.75 for graphic novels), making it still a rather small market – despite its recent growth.

Figure 15. Comic book revenues in the US.



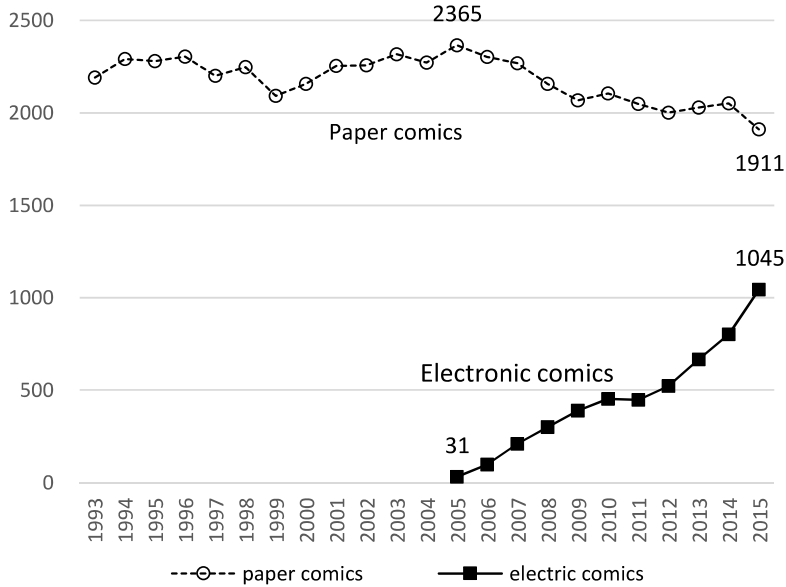
Source: ICV2 & Comichron data (<https://icv2.com/articles/news/view/37939/comics-graphic-novel-sales-up-5-2016>).

For contrast, the Japanese manga comics industry underwent much larger changes over a similar period. According to Tanaka (2016), the share of digital revenues in graphic novel sales in Japan went from app. 1% in 2005 to 35% in 2015. Notably, the trends for this period were slightly decreasing for print versions and dynamically increasing for the digital. The comic book culture in Japan seems starkly different than in USA. As Tanaka (2016) also notes, the share of comic book market within the whole book market in Japan equals app. 36%, but only app. 3% in the USA. For Japan, this magnitude of consumption translates into average yearly per capita expenditure on all comic books in Japan of app. 31.8 USD (22.4 USD attributable to ‘graphic novels’). As such, the Japanese manga comic market is highly popular and mainstream in Japan, as opposed to the more niche comic book market in the USA. Importantly, the Japanese manga market shows that the comics in general can become a good highly consumed from digital channels – i.e. that there is no inherent format-related barrier that prevents comic books from growing digitally.⁵³

comic book market insight, often based on data collected and received from Nielsen NPD BookScan. These data cover the bookstore and chain store market. Comichron and ICv2 release regular joint reports on the state of the comic book market in total. The digital sales are the best industry estimates and do not include subscription services.

⁵³ Europe constitutes another large and different comic book market, though not much data is available. France and Belgium constitute European countries with longest comic book traditions and numerous titles that reached global recognition (e.g. Asterix, Lucky Luke, Adventures of TinTin, the Smurfs or the Belgian-Polish Thorgal). As such, the group of comics have been dubbed Franco-Belgian. In France, comics account for app. 12.5% of all books (MacDonald, 2015). The best-selling comics series is the long-running humor series Asterix. Finally, in France, the average yearly expenditure on graphic novels per capita equalled approximately \$6.90 in 2015 (based on numbers cited by MacDonald, 2015), while the digital sales represented about 1% of the market (Cultural Services French Embassy in the United States, 2015).

Figure 16. Sales of graphic novels in Japan (unit = million \$).



Source : monthly report of publications, Zenkoku Shuppan Kyoukai, Japan

Source: Tanaka (2016).

Moreover, other entertainment markets in the USA showed higher proneness to digitization of the revenue streams. According to the Association of American Publishers (2017), electronic book formats (audiobooks and e-books) amounted to 23% of book revenues in 2017 – marking a decline from close to 30% in 2014. In the music market, the digital revenues became the majority share channel in the USA as early as in 2011, having reached 52% of total market sales, whereas globally the share equalled 33% at the same time, and 24% in Japan (IFPI, 2014). Clearly, the developments for the comic book market do not result from low digital consumption in the US market.

IV.1.2. Comic book distribution

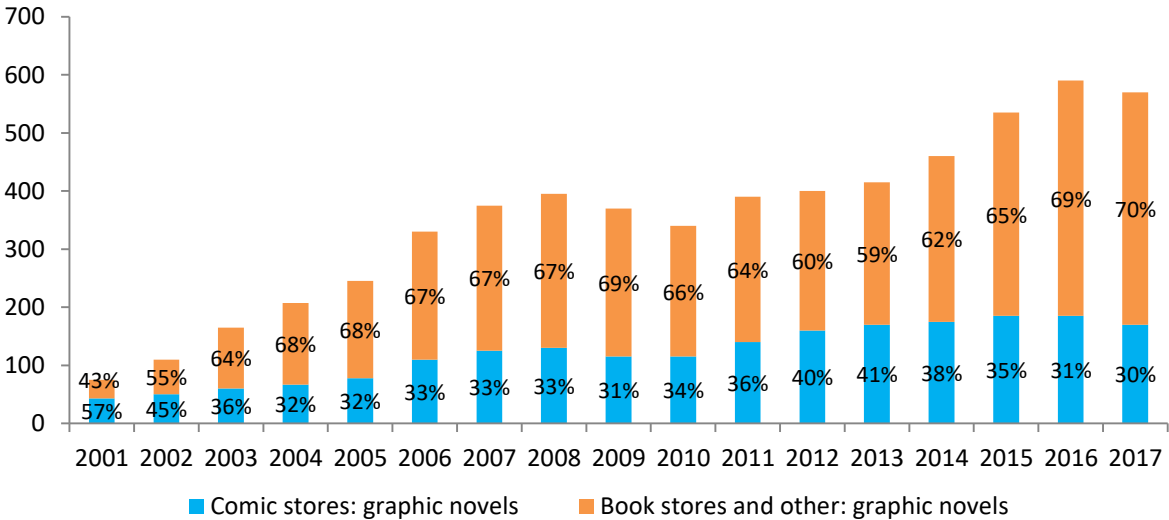
The comic book issues and graphic novels differ in terms of distribution channels. Besides online distribution, comic book issues are typically distributed through comic book stores and in small part through newsstands. In contrast, graphic novels are primarily distributed through regular bookstores and secondarily through comic book stores. At the beginning of 2000s the graphic novels were in similar part distributed through comic and regular book stores (in 2001, 57% of the revenues from graphic novels came from comic book stores). However, in 2002 the traditional bookstore channels became dominant and by 2017 were responsible for 70% of the revenues. This change marks a shift of graphic novels from a niche, consumer-specific market to a more general one.

Still, the number of comic book stores seems to have been slowly increasing in the 2010s. It is difficult to find reliable data on the number of comic book stores in the US. Heidi MacDonald (2013a) of the Comicsbeat suggested that the number was as high as 8,000 in the late 80s and early 90s, but that this was reduced to fewer than 2,000 during the “Distribution Wars of the 90s”. This drop would be in line with the aforementioned second disruption named by Milton Griep (MacDonald and Reid, 2016) – the shift to online retailers. However, in 2013, Diamond Comic Distributors (MacDonald, 2013b) announced that the number of comic book shops they distributed to reached 2,638 – marking a 4% increase over 2012. In 2016, ComicsPRO (Johnston, 2016) announced 2015 to be another year

of growth, relative to 2014 (by 3.8%) and Griep (2016) reported further growth in 2016, relative to 2015 (by 2.7%). The several years of growth puts the estimated number in 2016 around 3,000 – more than by half more than at the end of the “Distribution Wars of the 90s”. In contrast, over a similar period, the number of bookstore businesses has been reportedly declining (IBISWorld, 2018).

The primary channel for digital distribution, cooperating with both larger and smaller publishers, is the ComiXology store. It was launched in 2007, initially focusing on complementing and supporting the consumption and distribution of physical comic books. In 2009, ComiXology released its app and store, allowing for purchase of digital comics to smartphones and tablets and by 2012 it has reached an estimated 76% share of the digital market (Alverson, 2012). In 2014, ComiXology was acquired by Amazon. ComiXology hosts a vast selection of titles, collecting issues from all the major publishers, many independents and also allowing for self-publishing of comic book titles. The service might be thus considered an e-commerce business with platform options for smaller artists. ComiXology does not seem to suffer from the same competition issues as its movie and TV show counterparts (e.g. Netflix), where the major distributors struggle to become independent from the service. Instead, many of the larger publishers created their own digital distribution as complementary to distribution through ComiXology and not instead of it. Still, the ComiXology subscription service offers only a limited selection from the Marvel comics and offers none of the DC comics – the two publishers instead offer their own digital subscription services (more below).

Figure 17. Graphic novels sales by sales channel (comic stores and bookstores; millions USD)



Source: own elaboration based on Comichron data presented at the ICv2 panel at the 2014 New York Comic Con (Adair, 2014).

Both the print and digital distribution channels offer subscription services. Traditional readers may subscribe to print formats (e.g. to specific series), with new issues sent to the readers (or local comic stores) as soon as possible (though the process of delivery may take up to a few weeks within US alone). Similarly, they can often subscribe to a particular digital series to get the digital issue as soon as it becomes available. Moreover, some digital stores also offer general subscriptions for their content, more in line with the streaming services subscription models. For example, ComiXology offers a subscription that for a monthly fee of \$5.99 (as of October 2018) allows to read a large part of their catalogue, though as some users point out – mostly focused on first volumes of some comic series, and not necessarily the newest ones. On the other hand, Marvel Unlimited costs \$9.99

monthly and offers all of its content with the caveat that it becomes available in six months after the initial release. At the time of this writing, DC has just launched its own subscription service (DC Universe) at \$7.99 monthly, offering not only some of its digital comics collection but also other related media (e.g. DC animated and live-action TV shows and movies). The service thus aggregates several complementary types of content in a unique bid to bundle comics and film entertainment.

Digitalisation also paved the way for another direct-to-consumer channel of distribution, beyond the online retail and digital formats. Crowdfunding emerged as a business model for direct financing of comics creation, with creators being able to omit the publishing houses and regular distribution channels in the form of stores. Instead the creators – often established ones – post their comics projects to crowdfunding platforms such as Kickstarter or Indiegogo and sell the comics directly to the interested audience. In 2011, comics-related projects on Kickstarter earned app. \$1.5 million, but by 2018 this amount has grown to more than \$15 million (Bidoux, 2019). At the same time, comics projects at Indiegogo grew from app. \$37 thousand in 2011 to app. \$3.1 million in 2018 (own calculations based on data from Web Robots⁵⁴). Importantly, many of the comic books financed through crowdfunding later make their way to retail or ComiXology in a secondary distribution.

IV.1.3. Comic book sales – the top and the long tail

The comics market, like music or movie industries, is characterized by few majors responsible for the bulk of the industry revenue as well as large numbers of smaller publishers, independents and self-publishers. The two majors in this case are DC (founded in 1934, known e.g. for Batman, Flash, Superman, Wonder Woman or Justice League) and Marvel (founded in 1939, known e.g. for Avengers, Fantastic Four, Guardians of the Galaxy, Spider-man, X-Men as well as Star Wars comic books). According to the Diamond Comic Distributors reports, for the past 20 years these two publishers were each responsible for 30-35% of industry revenues (see Figure 18), with Marvel taking the top spot through most (but not all) months. These two are followed by a small group of publishers with meaningful but much smaller shares, including Image Comics (e.g. Kick-Ass, The Walking Dead) whose share equals app. 5-10% as well as Dark Horse (e.g. Hellboy, Sin City and up until 2015 Star Wars) and IDW (e.g. Duck Tales, G.I. Joe, Transformers).

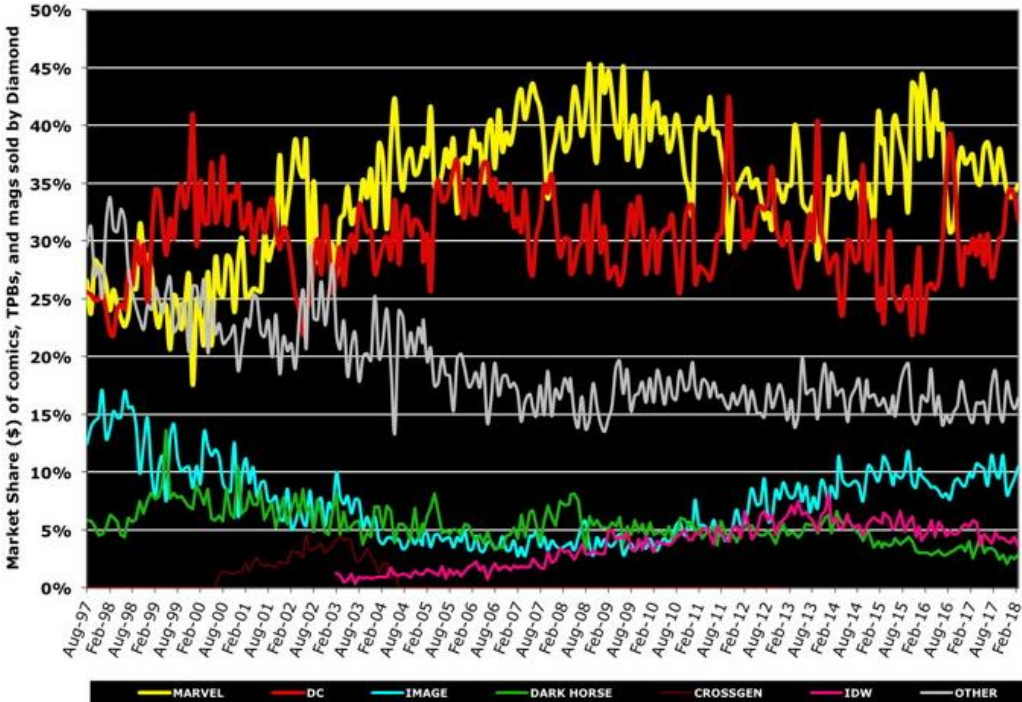
However, the publisher shares within book stores differ from those for the entire print market. Estimates from BookScan (MacDonald, 2017) show that bookstore sales are dominated by Viz Media – a manga publisher with 27% of the revenue shares, followed by DC with 14% and Marvel with 10%. Moreover, the data discussed by MacDonald (2017) also show a growing group of very young readers who are more inclined toward children/youth comic books. This youngest reader base is also much more likely to acquire their books from traditional bookstores, rather than comics stores.

The importance of the long tail of manga book titles has been growing in the USA, but the opposite occurred for the Western titles (Figure 19). The revenues from the manga titles have been on the increase since early 2000s up to 2007. They have then declined between 2007 and 2012 to a fraction (31%) of their 2007 size. Finally, the revenues have again picked up after 2012 and began slowly growing again. Importantly, the decline in manga revenues has been mostly attributable to the top 750 titles, while the subsequent growth driven by the increase in the long tail. The share of the long tail of manga titles in the US equaled app. 40% in 2007, 46% in 2012 and 59% in 2017. On the other

⁵⁴ <https://webrobots.io/> (accessed: 2019-03-22).

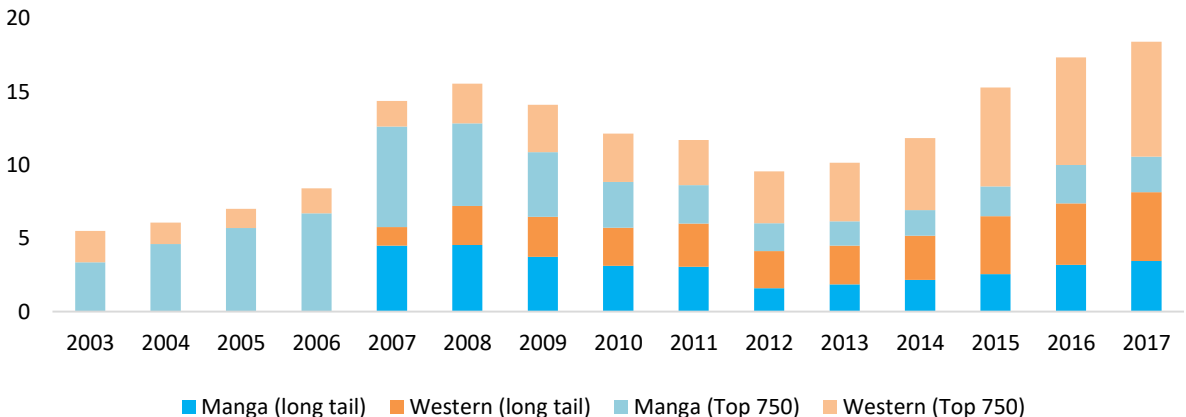
hand, the revenues from Western graphic novels have been growing since the early 2000s. Importantly, this growth occurred both for the large titles (top 750) and the smaller ones (the remainder). The growth was slightly faster for the top titles, with their share in total revenues increasing from 58% in 2007 to 63% in 2017. Thus, contrarily to most entertainment markets, the American comic book market has been increasingly capitalizing on the top few titles, while the share of revenues attributable to a tail of smaller titles actually declined. The opposite occurred for the manga titles in the same period, whose long tail of titles became more important for the revenues.

Figure 18. “Recent Publisher Market Shares of Sales of Comic Books, Graphic Novels, and Magazines by Diamond Comic Distributors to Comics Shops in North America”



Source: image from <http://www.comichron.com/vitalstatistics/marketshares.html> (accessed: 2018-10-05).

Figure 19. Sales of comic book titles, by types and rank



Note: the data for years before 2007 are not available for the whole market sales. Thus, only the top 750 are included in these years.

Source: own elaboration based on BookScan, NPD Group data shared by Comicsbeat - <https://www.comicsbeat.com/tilting-at-windmills-268-looking-at-bookscan-2017-and-this-time-its-certified/> (accessed: 2019-02-01).

IV.1.4. Fandom, the move to mainstream and reader demographics

The community of comic book readers has been undergoing large changes in the XXI century. For one, it has been largely extended by the proliferation of popular culture media connected to comics (i.e. movies, TV shows, video games). This popularization of the characters and stories from comic books contributed to the creation of whole fan communities devoted to them, without necessarily making them frequent comics readers. Two, the growing number of access options and availability of more diverse content paved way for the entrance of readers from different demographic groups, including higher and growing shares of female readers. Three, the move to mass markets and popularization of the manga genre caught the attention of another new demographic – youngest readers, who focus mainly on the Japanese titles.

Around the world, comics-related events have been growing – with USA hosting the largest of them. In 2014, Eventbrite estimated that fandom conventions of various types have been growing in size by app. 20-30% yearly since 2007-2008 (Salkowitz, 2014). Notably, the comic cons ticket sales are larger than for other types of events (e.g. gaming, anime, sci-fi, genres), with the average reaching 2.75 times that of general fandom event average. The two largest comic cons in USA are currently the San Diego Comic Con (SDCC) and the New York Comic Con (NYCC). In 2014, the former gathered on average 130,000 attendants (simultaneously⁵⁵), marking a growth from app. 300 in 1970, fewer than 20,000 in 1990 and app. 50,000 in 2000 (Hill, 2014). In 2015, the latter has gathered as many as 167,000 unique attendants over its four-day span, marking a growth from app. 30,000 in 2006 (Adair, 2015). These figures highlight the explosion in the popularity of comic con events. To put these numbers in further perspective, San Diego Convention Center (2016) estimates that SDCC had a regional impact of app. \$140 million in 2016 – more than any other convention or event scheduled in the convention centre – and mostly fuelled by direct attendee spending.⁵⁶ Eventbrite (2014) estimated that the ticket sales to fan conventions in North America alone grossed \$600 million in 2013 (and the case of SDCC shows that this is only a tip of an iceberg).

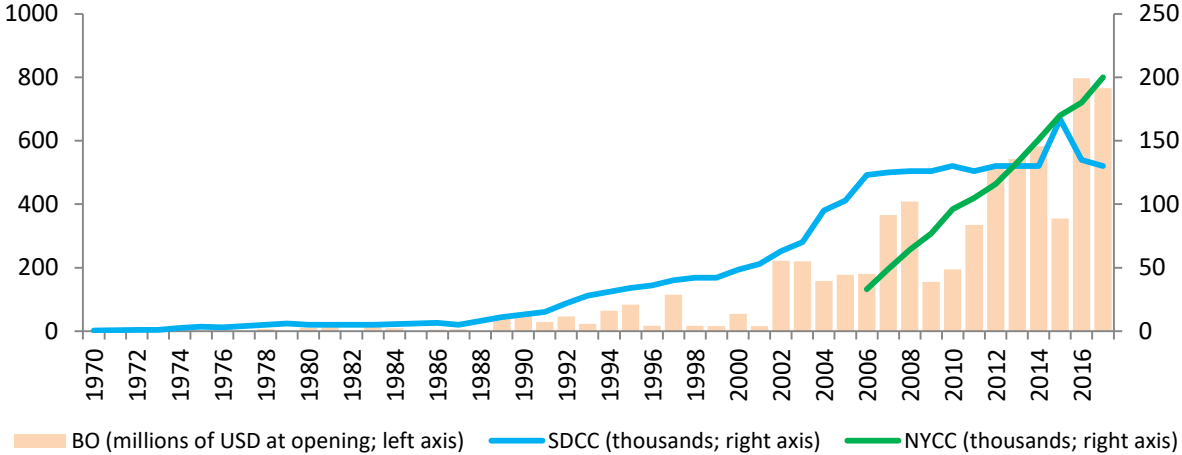
Interestingly, the Comic Cons – despite their name – have long since moved from being events solely for the comics readers. As comics-inspired media like movies or TV shows entered the mainstream culture (to the point of becoming, the programs of Comic Cons have begun to fill with meetings with actors, movie trailer premieres, as well as other media-related blocks gathering different kinds of fans (see Figure for a collation of the box office growth for comic book adaptations and of two largest comic con figures). Indeed, as Abad-Santos (2013) remarked in an article for the Atlantic, the media coverage of Comic-Cons, although large, typically referred only to the non-comics parts of the events or – at most – to the comics-inspired media like movies and TV shows. Eventbrite (2014) reported that across the fandom, fans claimed to be ‘super fans’ of on average at least 3 different themes – with Sci-Fi/fantasy being the most commonly indicated, followed by video games, movies/TV and only then by Comics/graphic novels. A follow-up Eventbrite (2015) survey found that less than 20% of the convention-goers indicated comic books and graphic novels as their primary interest. Notably, the largest fan conventions gather even lower shares of those primarily interested in comic books. Rob Salkowitz, during the “Insider Talks” session at the NYCC suggested that SDCC gathers attendees

⁵⁵ And more than 300,000 unique visitors over four days (Salkowitz, 2015a).

⁵⁶ Of note is that SDCC growth is currently capped by the limitations of space in the convention center. However, the convention center plans on expanding its territory – potentially spurring further growth of SDCC.

rather “interested in the show as a whole”, while only app. 6% of the NYCC attendees can be classified as primarily comics fans (MacDonald and Reid, 2016). Still, despite comics not being the main interest of most attendees, app. 37% of them ‘always or usually’ buy art at such events, while 26% ‘always or usually’ buy collectible books and comics (further 34% does that ‘sometimes’; Salkowitz, 2015b). This highlights the existence of a group of consumers whose interest in comics-related media drives them to at least some level of comics readership.

Figure 20. Growth of attendants at San Diego Comic Con (SDCC), New York Comic Con (NYCC) and of box office revenues for comic book adaptations



Source: own elaboration based on data from Box Office Mojo and Wikipedia.
 Note: the current venue of SDCC cannot host more than app. 130 thousand attendants simultaneously (hence the stop of further growth around 2006). SDCC reports the simultaneous attendance numbers, while NYCC reports numbers of unique visitors.

The growth of the fandom and their casual interest in reading comic books implies a shift in the structure of comic book readership. Woo (2012) categorised comic book consumers as readers (whose only motivation when acquiring a comic book is that of reading it) and collectors. The latter group consisted of consumers for whom collecting was also a goal in itself and whom Woo (2012) further divided into three groups: completists, who aim to collect every comic book from a specific series or event-related or character-related, etc. issues; hobbyists, who aim to collect comic books that are more difficult to find, to fulfil, e.g. a list, of important titles (Woo, 2012; highlights that the ‘hunt’ for the books is part of the motivation itself); and speculators, whose sole aim is to purchase rare comics in the hopes of reselling them for more at a later time. With the growth of the number of casual readers, the share of non-collectors has been increasing.

Another key motivation for convention fans is the need to connect with other people. As reported by Eventbrite (2014), 65% of surveyed fans mentioned making new friends as reasons to attend cons; 55% like to attend with friends and family; 40% want to reconnect with acquaintances from previous events; 15% would like to meet potential love interests and 43% aim to meet people whom they have previously interacted with online. These results shed light on the importance of personal contact with like-minded people among fans.

Other trends among comics fans include the rapid growth of the share of female readers. While it is difficult to shed light on the population of comics fans as a whole, most data suggest a growing

inclusion of female readers. A local shop *Fantom Comics* from Washington, DC, released partial statistics on their sales and customers, noting that the share of female subscribers increased from 31% in 2015 to 36% in 2016 (Fantom Comics, 2017). *SKTCHD* (Harper, 2015b) ran a survey across 25 comics retailers around the world, finding that most answers came from men aged 35 or more but that most of these retailers (77%) estimated that the share of female customers ranges from 25 to 50%. In 2013, ComiXology conducted a survey of its customers (Kraft, 2013) and characterized their typical customer as male, aged 27-36 and having read print comics for a long time. However, they also found that app. 20% of their new users were female (up from 5% in 2009), and that thus the share of female customers was increasing. A 2015 Eventbrite survey of fan events attendants (Salkowitz, 2015b) found that the gender proportions have become balanced when looking at all categories of fandom (and the share of female fans increased relative to 2014). However, for those interested primarily in comics/graphic novels, the proportion was still skewed towards men (64%), while women dominated for comic and genre-based media (59%) as well as manga and anime (57%).

Importantly, these new outcomes seem to have largely resulted from the growth of the digital retail channel and the resulting diversity of comic book options. At a 2014 ICv2 conference on “the New Comics Customer”, Andrew McIntyre of Things From Another World (at the time TFAW had four brick-and-mortar stores and an online comics shop) reported the findings of a customer survey. He noted that women constituted app. 23.5% of the sample, but that the share was actually larger for online shoppers, where 55% of visits and 30% of sales were attributed to female customers (Alverson, 2014). In 2011, along their release of a new series of comics (New 52), DC Comics (with Nielsen Company) conducted a survey among their customers – in comic shops, online and through digital retailers (ICv2, 2012). They found that only 7% of the in-store responders were female. However, this share was equal to 23% for the online responders, suggesting a higher willingness to participate in the online survey or a general preference for online comics shopping among.

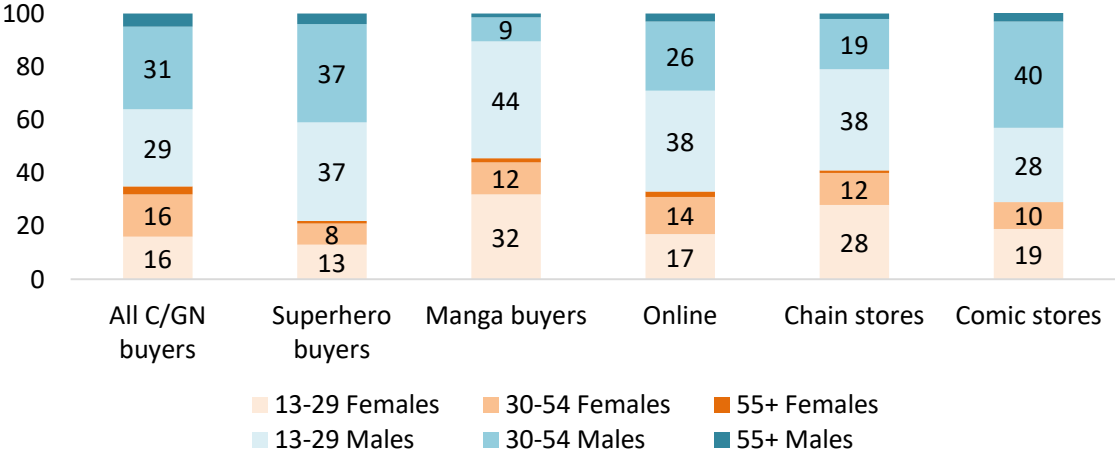
The latter reason would be in line with women being more interested in the titles less often provided by the brick and mortar stores – those from indie publishers and not the top-sellers. Indeed, in a market dominated by DC and Marvel comics, Fantom Comics (2017) noted that their female customers were less likely to purchase superhero books. Andrew McIntyre (Alverson, 2014) also reported that female readers were less likely to be Marvel/DC readers and rather preferred independent comics. They were also more often new to comics and much more likely to favor strong female leads. Schenker (2013) analysed Facebook ‘likes’ data and found that there was a higher share of female buyers for several of the comics publishers with lower shares in the market, including Archie Comics (52% of female ‘likes’), or JC Comics (65% of female ‘likes’). Female fans also contributed the vast majority of ‘likes’ for manga publishers (in line with the previously mentioned high share of female fans interested in manga and anime). Finally, Schenker (2014) also found that women constitute the majority of readers of female-led comics stories – which are still less common across the super-hero genre. These findings suggest that the digital distribution and its effects on the diversity of options might have contributed to the engagement of a new, female and growing market for comic books. Indeed, ComiXology CEO David Steinberger stated that the greater diversity in content was driving an increase in female and younger customers (Alverson, 2014).

This shift in the demographics of comics readers seems also reflected in the gender distribution among comics creators. In a short artist survey, Harper (2015a) asked 186 creators what kind of

comics they were primarily working on. More than 50% of male responders indicated ‘Floppies’ (i.e. comic book series of issues), with close to 30% indicating graphic novels. However, the more than 40% of female responders indicated webcomics, with close to 30% indicating graphic novels. Similarly, among responders not identifying as male or female, webcomics constituted the primary focus (more than 40%) with graphic novels constituting the second type.

The last of the major changes is the move in demographics toward younger audiences. This shift is additionally important as the younger audiences – just as female audiences – also tend to read different content and to acquire it from different sources. Many retailers have remarked that they observe both the ongoing comics readers becoming an older group and the arrival of new, young customers – especially since the advent of comic-inspired superhero blockbuster movies (Rogers, 2017). At the 2017 NYCC, Kristen McLean of NPD BookScan shared some of the results from their 72,000-person panel of book buyers (Alverson, 2017). The striking results show two different markets (see Figure 21). Men contribute 72% of the purchases of comics/graphic novels in comic shops, with the largest part of them aged 30-50. However, men contribute to only 59% of purchases through chain stores and the largest age group for all chain store buyers is 13-29. Finally, 67% of online purchasers are men, but the largest age group is again 13-29-year-olds. These findings suggest that the comic stores retain their typically male customers who are enthusiastic about the collection value of comics issues, while the newer channels like chain stores and online retailers tend to attract a more female and much younger audience. McLean also showed that this young audience differs in their preferences, with only 50% of superhero buyers being under 30, but as much as 76% of manga buyers being below that age. The trend is also connected to the changing gender balance, with female superhero buyers also being younger than the male superhero audience.

Figure 21. Comics/Graphic Novels demographics across genres and channels (NPD BookScan Data)



Source: NPD BookScan Data reported at the NYCC 2017 (Alverson, 2017).

IV.1.5. Publisher strategies: collectors, diversity and casual readers

Comic book publishers tend to adjust their publishing strategy in a way so as to cater to specific unique groups of customers. Over the recent years, the top publishers have introduced three key changes to their publishing strategies. First, they increase the collector value of some of their titles by introducing special cover variants of the comic book issues. Second, as comic book series grow large in issue numbers, publishers reboot their series (or create spin-offs) to create ‘jump-on’ points

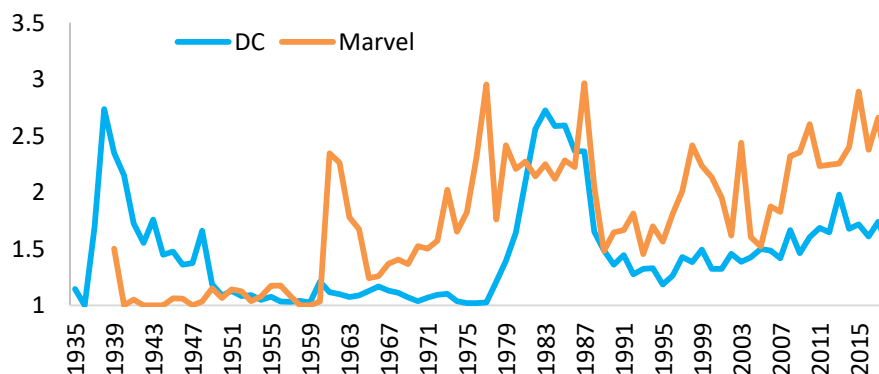
for newer audiences. Third, recognising the growing diversity of comic book readers, they increase the diversity of the characters starring in the comic book stories.

Note 6. To study the change in the publisher strategies further, innovative automated web scraping tools were developed and used to collect information on comic books from internet databases. First, information on over 140,000 issue titles from Marvel and DC, published since 1935, has been collected. The resulting dataset includes release dates, numbers of variant covers and the issue numbering. The data comes from the Grand Comics Database – an open database of comic books curated by an international population of volunteers. Second, new web scraping tools have been developed to create a dataset on comics sales since 1996. The data comes from the Comichron website, introduced earlier in this Chapter, reporting the sales for the top-selling comic books. Third, new web scraping tools have been developed to collect information on Marvel and DC comic book characters, as listed on the Marvel and DC FANDOM wikias. The FANDOM wikias are fan-curated encyclopaedias describing specific universes (comic book, but also book, movie, etc.). Among others, the wikias include information on characters – both lead and secondary – appearing in comic books, including information on their first appearance (dates and comic book titles), gender, and sometimes other characteristics like ethnicity or sexual orientation. The collected data describe over 100,000 characters and their iterations who appeared across Marvel and DC properties since 1935.

The following figures in this section contain notes with information about the data and its scope.

In the recent years, the cover variants have made a gradual return and increase in numbers. In extreme cases, comic book issues can have up to tens of variants, typically when the issues are unique or celebratory – e.g. Action Comics (the series that introduced Superman) #1000 has 42 cover variants listed at the Grand Comics Database⁵⁷. The two top publishers have greatly increased the frequency of issuing variant covers, with Marvel even reaching the numbers of variants of the speculation boom period (see Figure 22).

Figure 22. Average number of variant covers per issue for DC and Marvel in years 1935-2018



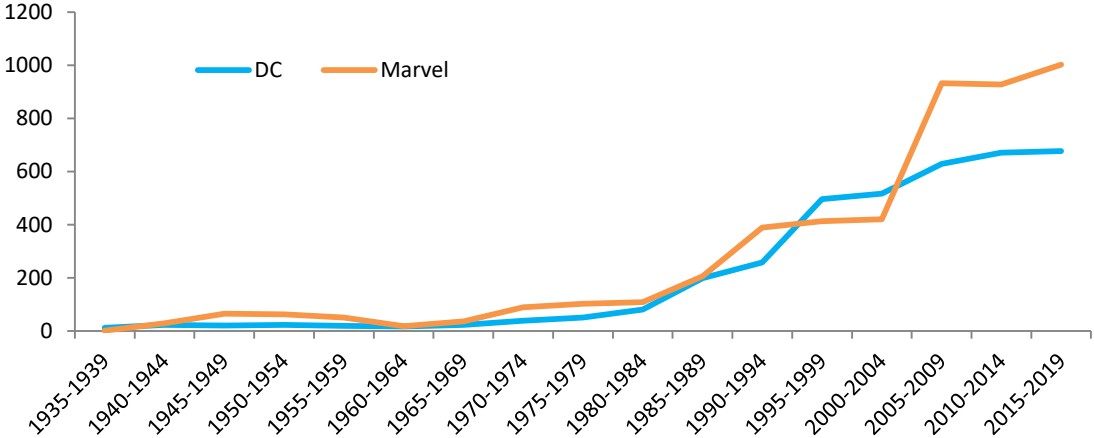
Source: own elaboration based on data collected from the Grand Comics Database (<https://www.comics.org/> - accessed: 2019-04-03).

Comic book publishers also use renumbering, reboots and spinoff series as a marketing tool for new audiences. This is because of the relatively good performance of early issues in new series. A growing trend among some publishers has been to introduce new series titles or to restart some of the existing ones – particularly for well-known and established characters. Such restarts are appealing for

⁵⁷ <https://www.comics.org/issue/1802009/> (accessed: 2019-04-04).

two reasons. First, they create good jump-on points for new readers as they often do not require knowledge of prior comic books. Second, they often introduce entirely new story arcs or reset the previous ones, thus inciting interest for readers with fondness for specific characters but no interest in the previous run of the series. The numbers of comic book issues numbered #1 have been steadily increasing, with Marvel especially increasing their volume in the second half of 2000s (see Figure 23).

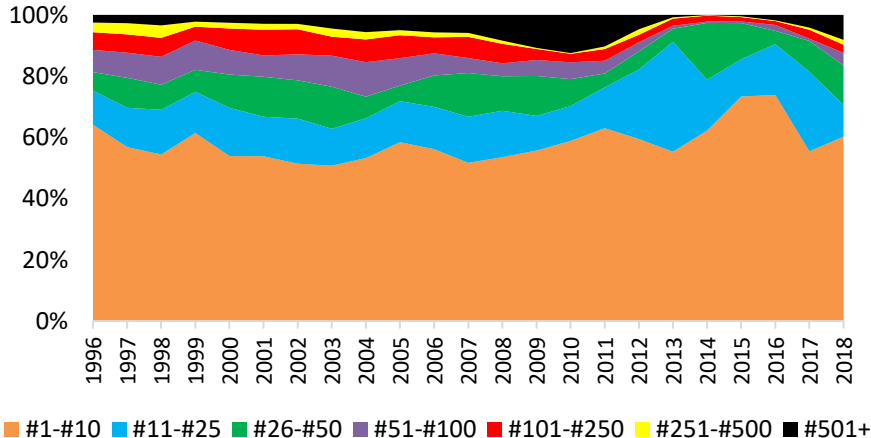
Figure 23. Number of issues numbered #1 released over time by the top two publishers



Source: own elaboration based on data collected from the Grand Comics Database (<https://www.comics.org/> - accessed: 2019-04-03).

This trend translated into a growing contribution of new series and reboots to the publisher profits. Sales reported by the main Diamond Comic Distributors show a growth of the contribution from titles with relatively low issue numbers (particularly below #25) around the first half of 2010s. Notably, however, the share of new series in the total comic book market revenues has been growing slower than the overall number of new series. Potentially, this means that the premia associated with a series start is slowly deteriorating. Indeed, in 2017 and 2018 the share of long-running titles in overall revenues has been on the increase (see Figure 24).

Figure 24. Shares of issue numbers in the comic book sales revenues between 1996 and 2018.

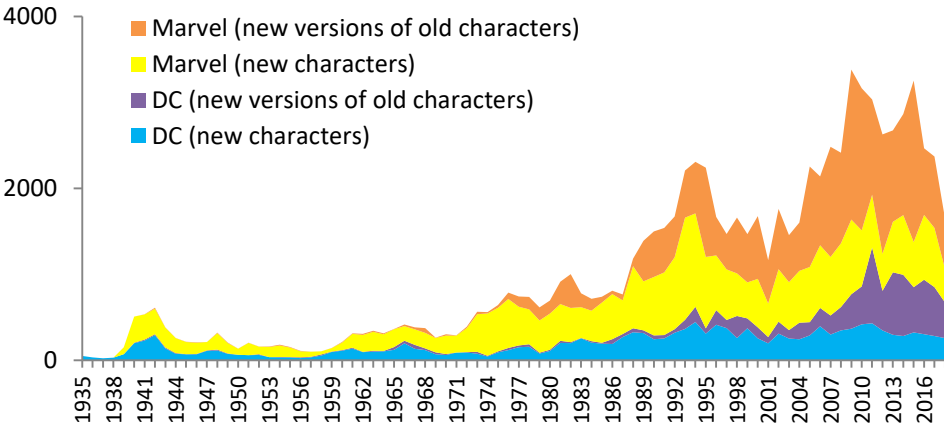


Note: the values are depicted as shares as the actual data reported at Comichron changed over time. Years 1996-1997 include a combination of preorders placed with Diamond Comic Distributors and Heroes World Distribution (which distributed Marvel comics between 1995 and 1997). Since 1997, the numbers pertain to Diamond Comic Distributors, which accounts for the majority of comics sales to shops. Moreover, the data before February 2003 concerns preorders, while the data since February 2003 is based on final orders.

Source: own elaboration based on data collected from the monthly Comichron reports.

Another implication of the shift to reboots and spin-offs is that the top publishers increasingly rely on their back catalogue of comic book characters. This has been evidenced in a gradual shift from introducing new characters to providing new twists on older characters or introducing the characters to new types of media. Figure 25 presents numbers of character debuts since 1935 for Marvel and DC. The Data come from FANDOM wikia for DC and Marvel. Importantly, they include all characters and variants (app. 100 thousand) that were contributed and described by the wikia users (including characters only mentioned by name with no role in the stories). The numbers are separated into entirely new characters and new variants of pre-existing characters. Notably, the variants include, i.a., series reboots, alternate comic book timelines or dimensions, TV shows, cinematic universes, books and other media appearances, etc. (essentially any character appearances that are not direct continuations of previous character iterations). On the other hand, the variants do not count any spin-off characters (e.g. Batman, Batgirl, Batwoman, etc. are not treated as different variants of the same hero) or new characters taking up the mantle of other heroes (e.g. Miles Morales Spider-Man is an entirely new character and not a variant of the Peter Parker Spider-Man). These kinds of characters are counted as new when they appear for the first time. The gradual increase in character variants began around 1980s, but it gained further traction in the second half of 2000s when it surpassed the growth in new characters for Marvel and later for DC as well (in early 2010s).

Figure 25. Numbers of first appearances of new characters and new versions of older characters by DC and Marvel, between 1935 and 2018

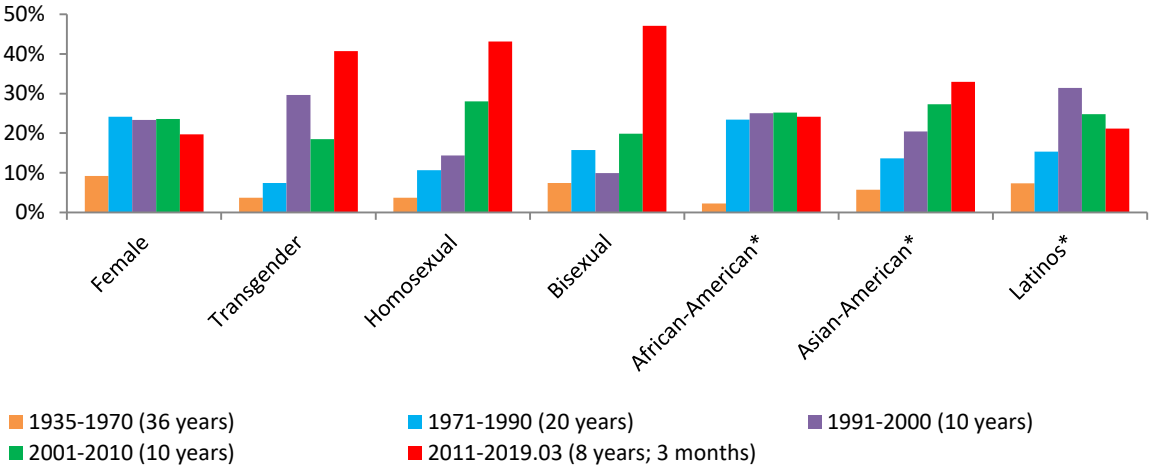


Source: own elaboration based on data collected from Marvel and DC FANDOM wikis (https://marvel.fandom.com/wiki/Marvel_Database and https://dc.fandom.com/wiki/DC_Comics_Database - accessed: 2019-04-03).

Over the past decades the publishers have also recognised the growing need for diversity in the proposed titles. As previously mentioned, new audiences have recently emerged (e.g. female audiences) with higher interest female-led and more diverse comic book titles. As such, both DC and Marvel are gradually increasing their catalogues of minority characters (or of underrepresented demographics; see Figure 26). Most of the non-white and non-male characters appeared only after 1970. First, between 1971 and 1990 around 25% of the existing female characters in both DC and Marvel and African-American in DC have been introduced. The following decade (1991-2000) saw the same increase in new female and African-American characters as the preceding twenty years, and this trend has been since stable with similar numbers in the 2000s and the 2010s. Almost half of the transgender, homosexual and bisexual characters have been introduced only in 2010s. Finally, Asian-American characters in DC comics are gradually increasing in numbers with each decade introducing

more characters of this minority. Importantly, these increases are heavily outmatched by the numbers of new variants of older characters as evident in Figure 25. On the other hand, the number of new characters of Latin descent has been slightly decreasing in the recent decades.

Figure 26. Share of minority characters in Marvel and DC by the time of their first appearance (100% = all characters of a specified minority)



Note: *only DC characters used for ethnic minorities as Marvel FANDOM wiki does not provide similar lists. Other minorities (e.g. pansexual characters) are not included due to small numbers. Provided dates refer to the first appearance of the character version that was classified as the minority (e.g. if a previous version of the character did not belong to a minority, the date refers to the later version – e.g. from a reboot series or an alternate comic universe – where the character did). Moreover, the dates are of the first appearance of a character and not of the year when they were identified as a minority. For example, if a character has been featured in comics for 60 years but identified as bisexual only in the recent years, they would still be classified as a minority character who first appeared 60 years ago. As such, the reported shares are skewed toward the earlier years, even if the characters were defined as minorities only recently.

Source: own elaboration based on data collected from Marvel and DC FANDOM wikis (https://marvel.fandom.com/wiki/Marvel_Database and https://dc.fandom.com/wiki/DC_Comics_Database - accessed: 2019-04-05).

IV.1.6. Comic book piracy

Comic book piracy did not reach large scale until first digitisation technologies and hardware made their way to the mass markets. Just like in the case of books, home copying comic books was not possible until the popularisation of photocopying machines. Still, the photocopying machines typically induced some sort of quality loss if not total colour loss. While these issues might seem manageable for books consisting only of text, they would invalidate any attempts at copying comics. Thus, comic book piracy only sped up with the appearance and proliferation of high-quality digital scanners that allowed to scan whole comics and save them as close-to-perfect digital files.

The popularisation of scanners gave rise to a scanner culture in the comic book community, with various scanner groups putting effort into comics digitisation. In a similar vein to hacker or warez groups working on unauthorised games or music releases, the scanner groups typically consisted of groups working on individual titles. These teams would comprise scanners (people who did the actual page-by-page scanning of new comics), editors (who would adjust the scans, straighten the pages, etc.) and distributors (responsible for sharing the files online). A single release could take up to six

hours of work according to Delwiche (2014), though a retired scanner veteran Archangel has said that with practice the time could go down to 30-40 minutes (Johnston, 2012).⁵⁸

The scanner groups are not motivated by personal gain but rather by the goal of comics preservation. Essentially, the scanner groups put much worktime with no monetary reward for their work. Instead, many scanner groups cited preservation as their main goal. To this end, they have often put additional effort to correct the colours or flaws of the original product (Delwiche, 2014). According to Delwiche (2014), three scanner groups might be responsible for most of comics scans available through torrent networks. Quite tellingly, the largest and most prominent of these named itself *Digital Comics Preservation*. Brill (2005) emphasises that pirate distribution was the only channel to acquire some of the out-of-print titles that were priced in thousands of dollars in online markets.

A second motivation of the scanner groups is the recognition among the reader and scanner communities. For this purpose they tagged their releases with graphics, typically including both the crew name and those of specific contributors. The graphics themselves ranged from crude alterations of existing art to professional modifications or entirely new art. Delwiche (2014) also describes that some scanner tags paid homage or memorised members of the community who passed away. They have also often stated that the reader should buy the comics if they like it.

The scanned issues have been typically distributed over several channels, but are not especially convenient for reading. Brill (2005) names BitTorrent networks as some of the most popular ways for comics circulation, whereas comics could get bundled into large archives of full series or connected titles. Still, comics were also distributed through other channels, such as file-hosting services, chat channels or other P2P networks (e.g. DC++). Despite the variety of sources, some of them evidenced technical sources, and some of the items tended to be of low quality. As Brill (2005) points out, they also often required specific comics reading software (e.g. CDisplay), which often provided a crude experience when comic book pages strayed from a standard format.

Piracy of comic books took of further, as digital formats started being officially published. This dramatically lowered the costs of acquiring a digital copy and made much of the scanners' digital preservation efforts redundant – especially, with top publishers digitising their back catalogues. A series of interviews indicated that some, but not all, scanners abandoned scanning: a scanner named *Noah Vale* claims to know some scanners who have stopped scanning the new titles due to digital sales (Mroczkowski, 2011a); another nicknamed *Scanbug* states that they do not believe digital sales will affect scanner groups as the sold formats are typically web-based or with DRM (while scans can be downloaded and saved; Mroczkowski 2011a); the sentiment regarding DRM-ed comics is shared by another interviewed scanner (Mroczkowski, 2011b) who claims to have quit due to digital sales but believes that scanning would cease if publishers switch to DRM-free formats.

⁵⁸ A similar scanner culture emerged in Japan around the beginning of the 2000s, where it gained the nickname of 'scanlation' (scanning + translation). Scanlation included additional steps in the process of preparing digital copies as it aims mainly at delivering the comics to other parts of the world. As such, beyond the steps taken by the scanner group, scanlation involves translation of all the text into other languages (typically English), and careful input of the translated text into the speech and text balloons (including the use of special fonts for, e.g. shouting). Therefore, scanlation involves more work with the altruistic aim of sharing manga comics with those with no access to the books or with no knowledge of Japanese language. Additional incentives might, include providing copies that are closer to the original: Howell (2001) found that US and French translations of Japanese comic books often make the language closer culturally to the readers instead of retaining original aspects, while Matsui (2009) wrote about censorship of some manga titles in their US editions.

In recent years, websites offering full comic books readership through browsers emerged. These websites differ in three aspects from the comics piracy of the prior decade. First, the websites themselves may include advertisements, making them profit-oriented (at least on the part of the actual service owners). Second, they do not require downloading and instead allow for easy access directly from the website. Third, the format does not require any additional software for reading, unlike the previously distributed files that required additional software. Still, many of the uploaded comic books are high quality scans and not digital copies; and continue to include scanner tags.

These websites gained huge popularity among readers in very little time. Harper (2016) showed the rapid growth in the number of visitors to three unnamed websites with free comics, to the total level of app. 8 million monthly visits by April 2016. Harper (2016) dated the emergence of the first of these sites at early 2015. Presently (2019-03-21), the online traffic tracking service SimilarWeb reports almost 20 million monthly visits to the comics sharing website readcomiconline.to, with the average visit duration of 14 minutes and 28 seconds, and approximately 54% of the traffic coming from mobile devices. By comparison, SimilarWeb reports 2.8 million monthly visits to Comixology.com, with a further 337 thousand to Comixology.eu and 376 thousand to Comixology.co.uk – jointly constituting less than 20% of the visits to readcomiconline.to. Notably, the pirate website is only one of many. Another of the top Google search results – readcomiconline.ru – boasts 1.6 million monthly visits (with the average of 10 minutes 45 seconds visits).

IV.2. Reading habits of comic book readers

Other potential changes to the readership of comic books, include modes of consumption, time of consumption, as well as channels of acquisition of comic books. To better understand the consumer perspective new data was collected for this thesis with a panel of three surveys among an online group of comics readers. The data allow me to highlight some of the characteristics of comics readers, their attitudes towards digital versions of comic books, the way they consume comic books and the scale of unauthorised consumption. I start by describing the survey procedures and my study sample. Afterwards, the results are compared with other sources of such data and an empirical investigation is conducted for the issues listed above. In section IV.3. econometric methodology is applied to analyse the effects of unauthorised readership on purchase decisions, as well as to analyse whether the physical or unauthorised comics readers can be persuaded to become authorised digital readers if their switching costs are overcome. Finally, potential effects of lowering the price of digital comic books are simulated for the readers in my sample.

IV.2.1. Data collection

The online survey was conducted among comics readers in three monthly waves, between February and April 2018. For the February wave, invitations to the survey were posted on several public forums and community groups on comics (see Table 10). The forums included Facebook groups, 66 Reddit subreddit groups and the Comic Book Resources forum (see Appendix B for the list of the Facebook and subreddit groups). The invitations contained information about the topic of the survey (digital readership of comics), the time necessary for its completion (approximately 5-10 minutes) and about the chance for prizes in the form of digital comics worth up to €10. This yielded 432 responders who finished the survey, around 97% of whom were enlisted on Reddit. 349 responders left an e-mail address as means of contact about the prizes and further rounds of the survey.

A month after the first survey, an invitation e-mail was sent to all of the responders who provided an e-mail address to participate in a second – follow-up – survey, with higher chances of rewards. 201 of the first-wave responders filled out the second survey. Finally, another month later another invitation e-mail was sent to the 1st wave responders, asking them to fill the third survey, with yet again higher chances for rewards. 184 responders participated in the final survey, of which 157 also filled the second survey. Table 10 summarises the numbers of responders and recurring responders.

The rewards for each survey were randomly assigned across the responders, and the rewards increased in each wave. This mechanism was implemented to minimize attrition. The rewards comprised digital comic books chosen by the winners, up to the total cost of 10€ at ComiXology, with 40 responders awarded in February, 50 in March and 90 in April. Moreover, a separate random draw of 50 participants in March received a comic book of my own choice, chosen from the set of comics they have not previously read (based on the survey answers – see Section V.2.2. on questionnaire design). These comics issues ranged in price from 2.69€ to 4.49€.

The first survey was open for 4 days, the second for 10 days and the third for 17 days. Immediately after each of the surveys finished, I have drawn the winners and sent e-mails about the rewards. The winners were asked to choose digital comics at the ComiXology web store and to send their choice back in an e-mail, for which they had two days.⁵⁹ After that, each of the winners received a gift in the form of the indicated comics in the ComiXology shop.

Table 10. Responders of the three surveys.

Responders	1 st round		2 nd round	3 rd round	In all three rounds
	All	With e-mail	All	All	
Facebook groups	5	4	3	2	1
Reddit	420	341	195	181	155
CBR Forum	7	4	3	1	1
Total	432	349	201*	184	157
Rewards	40 (own choice)		50 (own choice) and 50 (my choice)	90 (own choice)	180 (own choice) and 50 (my choice)
Date	15-18 Feb 2018		16-25 Mar 2018	14-30 Apr 2018	-

Note: *There were 202 full answers in the 2nd wave, but one of the provided e-mail addresses was not matchable with the other surveys.

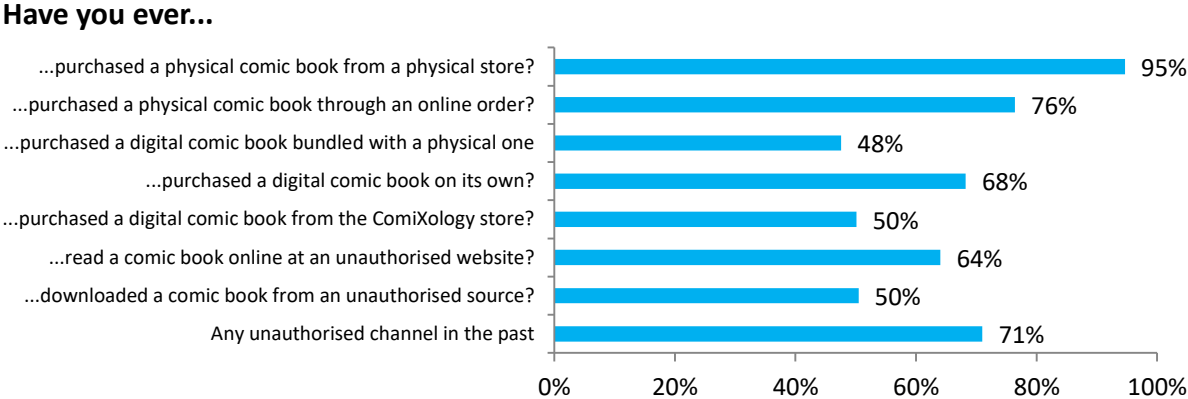
IV.2.2. Questionnaire design and sample description

Each of the surveys contained questions about the reading habits or interests of the surveyed sample. The responders were also asked to provide basic demographic information. Most of the responders were heavy comics readers who tried various formats and channels of acquisition of comic books. Only 13% of the responders indicated reading fewer than one comic book issue per month, with 23% reading 1-3 per month, 11% reading 1 per week and about a half reading more than one comic book issue per week. 46% of the responders indicated being very interested in comic books and 36% being extremely interested. 95% of the responders have purchased physical comic

⁵⁹ In each of the surveys, the responders were informed on when they can expect the results to be sent and that they will have short time to answer. Still, reminders were sent on the second day. Whenever the responders did not reply, a new group of responders was drawn and awarded instead.

books in a physical store and 76% have purchased physical comic books online. 68% have in the past purchased a digital comic book, but fewer of all responders - 50% - have done so at the ComiXology store. Finally, 71% of the responders have in the past either downloaded an unauthorised copy of a comic book from the internet or have read an unauthorised copy online. This last statistic lies in stark contrast to self-reported readership in the few other surveys, of whom only 25% (ComiXology users; ComiXology, 2013) or 9% (metropolitan comic book store patrons; Stevens and Bell, 2015) admitted to having read from unauthorised sources.

Figure 27. Past experiences of survey participants



Source: own elaboration based on collected survey data.

The responders in my sample were typically male, aged between 18 and 34 and from USA. Only about 10% of the surveyed readers in my sample were female. This puts the share of female readers in my sample lower than the ones reported in the previous section. In terms of gender balance, my sample thus seems heavily skewed towards men, at the levels comparable to the sample of early ComiXology customers or the in-store surveyed readers of the DC New 52 line of comics. Importantly, my research design might have contributed to this sample bias as the top-selling comics are typically of the super-hero genre, which is – as was noted in previous section – more often read by men. Four persons identified themselves as neither men nor women. However, this number was too small to include them as separate groups in the analysis. The age structure of my responders seems more comparable with those found in the cited reports, with 25-34-year-olds and 18-24-year olds constituting the two largest groups – 37% and 32% of the responders, respectively. Finally, majority of my responders were stationed in the US (69%) with app. a fifth from other English-speaking countries and only 14% from Asia, Europe (without UK) or Latin America.

Moreover, as a recurring part in each survey, the responders were asked to indicate which of the 50 popular comic books from the prior month they have read. The top-selling comic books were identified at the Comichron website⁶⁰. In the first survey, the list included the top 50 best-selling comics issues from January. In the second survey, priority was given to comics issues that constituted follow ups to the issues in the previous survey. This was done to allow tracking series readership over consecutive issues. However, only follow ups that made it to the top 100 were picked, and the rest of the comics were chosen from the top 50. These mostly included new series. The same was repeated for the third survey, with priority given to comics series that were included in the first two surveys. In total 150 titles were shown, many of which belonged to series included in more than one round.

⁶⁰ <http://www.comichron.com/monthlycomicssales.html> (accessed: 2019-02-08).

Additionally, some of the series had more than one issue in a round (i.e. were released with a higher than monthly frequency). Importantly, all of the chosen top-selling comics issues were new releases (released at the same month for which they appeared in the top-selling list). Table 11 summarises the characteristics of the included titles and series.

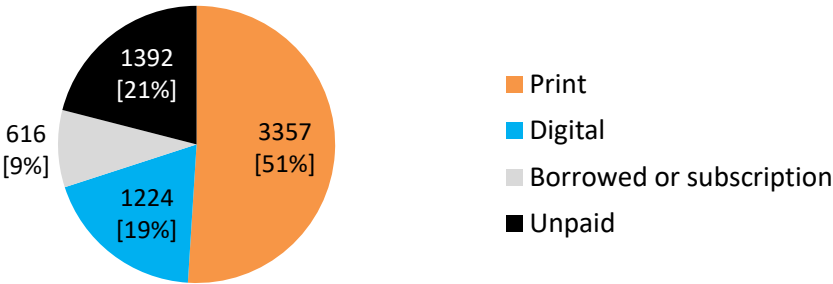
Table 11. Characteristics of the comic book sample

Variable	Number or Share			
Number of comics issues	150			
Number of unique comics series: Total	46			
- With issues in one round only	9			
- With issues in any two rounds	14			
- With issues in all three rounds	23			
Publishers				
- Marvel	51%			
- DC	42%			
- Image	7%			
Statistics	Median	Std. dev.	Min	Max
Issue number	38.5	328	1	999
Number of issues in a series (observed in total)	3	2.2	1	12
Number of issues in a series (per round)	1	0.7	1	4
Number of issues in a series (planned)*	5.5	3.7	1	12
Price	\$3.99	0.66	\$2.99	\$5.99
Sales	44,482	26,187.62	187,583	18,514

Note: *The statistics refer only to the series with a planned finite number of issues. However, 30 out of 46 series in the sample were ongoing, without a set number of issues.

For each of the marked comics the responders were then asked to indicate how they acquired them. The options included: “purchased physical copy”, “purchased digital copy”, “access through subscription”, “unpaid digital copy (e.g. downloaded from the internet or read online)”, “borrowed physical copy (including from a library)”. Table B1 in Appendix B shows the statistics for the comics acquisition of the 150 titles. Most of the responders acquired at least 5 comic books from the top 50 in each of the studied rounds. About half of the acquired titles were in print format. About a fifth were purchased digital copies and another fifth comprised unpaid (unauthorised) digital copies. Fewer than a tenth were acquired either through borrowing or a subscription (see Figure 28).

Figure 28. Acquired titles by type of acquisition channel



Source: own elaboration based on collected survey data.

While many of the responders have used unpaid sources for the titles in the sample, the share is actually much lower than the total share of responders who have indicated having used an unauthorised source in the past (21% vs 71%). This shows that most of the readers in my sample are familiar with at least some unpaid sources, but do not usually use them for their reading needs.

Despite some differences in the demographics and unauthorised readership, the purchasing patterns among my sample were well correlated with the industry-wide sales. The correlation between the numbers of print comics acquisitions by the responders of my survey, and the sales reported by Comichron for the relevant months ranged from 63% (for March numbers) to 77% (for January numbers). While my sample might be more representative of the passionate Reddit communities, it does reflect market-level consumption choices at the top of the distribution of sales.

Table 12. Characteristics of the responders.

	All	Repeat responders
Responders	433	228
Demographics		
Age:		
- Under 18	31 (7%)	15 (7%)
- 18-24	137 (32%)	68 (30%)
- 25-34	159 (37%)	90 (39%)
- 35-44	84 (19%)	44 (19%)
- 45-54	15 (3%)	8 (4%)
- 55 or older	7 (2%)	3 (1%)
Female	45 (10%)	17 (7%)
Country (grouped)		
USA	295 (69%)	154 (68%)
Canada	33 (8%)	18 (8%)
United Kingdom	33 (8%)	18 (8%)
Europe (without UK)	28 (7%)	15 (7%)
Asia (incl. Russia)	20 (5%)	8 (4%)
Australia and New Zealand	11 (3%)	8 (4%)
Latin America	10 (2%)	6 (3%)
Correlation between the purchases of the top 50 comics in the sample and the overall sales		
Survey round 1	0.77	0.65
Survey round 2	0.70	0.76
Survey round 3	0.63	0.55

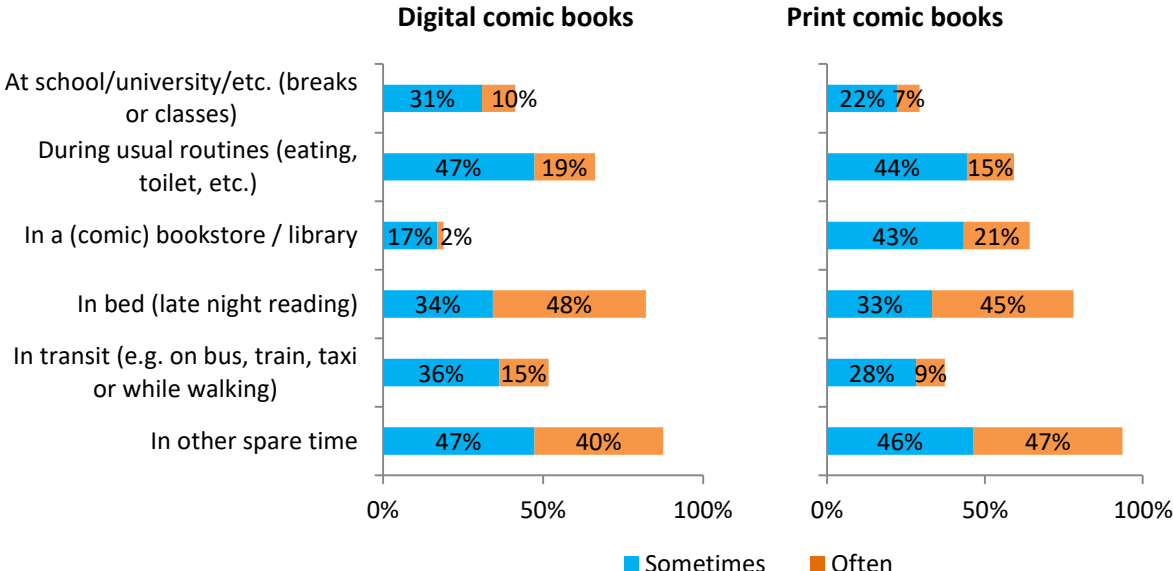
Source: Own elaboration based on survey and Comichron data.

IV.2.3. Readership habits and comics-related media

Most of the digital comics consumption occurs via mobile devices. About two out of three of the responders in my sample use one type of device for reading digital comics, while app. 30% do so using two devices. The most popular device for reading digital comics was the tablet, with 57% of the responders indicating it (for reference, it was indicated by 80% of ComiXology customers; ComiXology, 2013). Mobile phones and computers were also used by large shares, constituting 40% and 42%, respectively (36% and 44% among the ComiXology customers; ComiXology, 2013).

The differing types modes of consumption (a physical copy vs a smaller mobile device) translate into slightly different times for readership of comics. Only 7% of readers indicated often reading print comics at schools or universities, and 22% indicated doing it sometimes. The shares were higher for digital comics, equalling 10% and 31%, respectively. Potential reasons might include it being easier to conceal reading a digital copy during classes than it would be with a print copy. On the other hand, responders indicated reading print copies at bookstores or libraries (43% sometimes and 21% often), while the shares were much lower for digital copies. Still, app. 17% of readers indicated sometimes reading digital comics at bookstores or libraries. Finally, digital comics were more likely to be read in transit when using public transport, being driven in a taxi or simply when walking. In this case, 36% responders indicated reading digital comics sometimes and 15% doing so often; while the respective shares for print comics equalled 28% and 9%. These results show that digital comics are more flexible in terms of when they can be read. However, print comics books are also often read in bookstores, which thus also constitute a place where print comics readers might go to spend time on reading.

Figure 29. Typical occasions to read comic books, by format.



Note: the question’s wording was “On what occasions do you read [digital/physical] comic books?”.
 Source: own elaboration based on survey data.

Comics readers are also heavy consumers of other comics-related media. For one, only 2% of the second round responders indicated not having played any comics-related video games. 59% indicated having played more than two Marvel comics-related games and 55% indicated having played more than two DC comics-related games (21% indicated having played other comics-related games). Most of the readers were also up-to-date with the main blockbuster superhero cinema franchises. 70% indicated having seen all of the Marvel Cinematic Universe movies or aiming to do so, while 19% indicated having seen most of them. Other franchises were less popular, but still had loyal viewers, with 49% responders indicating watching all of the DC Extended Universe movies (and 18% most of them), 42% indicating watching all of Columbia Pictures Spider-man movies (32% most of them) and 37% indicating watching all of the 20th Century Fox comics-based movies (36% most of them).⁶¹ Many of the responders also indicated having seen numerous other comics-based movies,

⁶¹ For context, Marvel Cinematic Universe comprised 17 film titles at the time of the surveys, with an 18th one premiering at the time of the second survey. DC Extended Universe comprised five films at the time of the surveys. Columbia Pictures had

including Dredd, Hellboy, Kick-Ass or the Watchmen. Finally, 50% of the responders reported watching all seasons of at least 7 different comics-based TV series, and 50% of the reported having started but stopping with at least 3 such series – from lists of the most popular ongoing comics-based TV shows (see footnote for the list⁶²). They have also indicated numerous other comics-based TV shows that they have watched, including iZombie, Preacher and the Tick. This indicates the interaction between various media formats and comic books, with the sampled comic book readers heavily participating in consumption of other comics-based content.

IV.3. Displacement effects of unpaid readership

Digital disruption in media industries largely took place because of the unpaid alternatives availability. Thus, to understand if comic books were disrupted in a similar way it is necessary to analyse whether the unpaid consumption tends to displace the paid consumption. This section follows the established methodological approaches to answering this question to construct an empirical study of the effects of unpaid comics consumption on the print and digital purchases of comic books. This is the first study to do so for the American comic book market.

IV.3.1. Relevant empirical literature

I apply a panel survey design based on previous literature on other types of goods. Such approaches were primarily exploited in studies of Joel Waldfogel (Rob and Waldfogel, 2006, 2007; Waldfogel, 2009, 2010; Bai and Waldfogel, 2012) – hence jointly referred to as the “Waldfogel studies”. Rob and Waldfogel (2006) asked U.S. college students to provide information on purchase and downloading of music albums (including 261 hit albums) over the years 1999-2003. Rob and Waldfogel (2007) asked University of Pennsylvania students in two waves to provide information on viewership of top 50 movies in each of the previous three years. The modes of viewing included theater, television, rental, purchase, download or a burned DVD copy. Waldfogel (2009) asked University of Pennsylvania students about their viewership and its frequency of TV shows in two preceding seasons (2005-06 and 2006-07). Waldfogel (2010) asked Wharton students in two years about their listening of top songs on iTunes, including songs from half a year earlier. Finally, Bai and Waldfogel (2012) replicated the Rob and Waldfogel (2007) study on a sample of Chinese students and a sample of Chinese internet users. Each of the mentioned studies considered a cross-sectional approach but concluded with a panel regression with fixed effects, by utilizing the time dimension included in the data. The longitudinal approach with consumer fixed effects allows to eliminate responder-specific determinants of consumption, such as general propensity to consume specific type of content.

Similar approaches have been also used in studies of other authors. An early study of Hennig-Thurau et al. (2007) collected data from more than 1,000 German consumers representative of the movie consumer population in Germany. The responders took part in three survey waves over 8 months and received €10 (as well as some additional prizes) for completing all three. In the first survey the responders reported their viewing intentions regarding upcoming movies. In the second survey, they reported whether and how they have viewed them and reported intentions regarding their future

8 superhero comics-related film titles at the time of the surveys. Finally, 20th Century Fox had 11 superhero comics-related film titles at the time of the surveys.

⁶² The list of titles provided to the responders included: Arrow, Flash, Supergirl, Legends of Tomorrow, Daredevil, Defenders, Iron Fist, Jessica Jones, Luke Cage, Punisher, Agents of S.H.I.E.L.D., Black Lightning, Gifted, Gotham, Inhumans, Krypton, Legion, Riverdale, Runaways and The Walking Dead.

viewership of those movies. The third survey asked about their viewership choices once most of the movies were made available on DVD. The authors then modelled legal viewership decisions while controlling for unauthorized consumption and previously reported intentions of viewership. Herz and Kiljański (2018)⁶³ largely followed the framework of Rob and Waldfogel (2007) and Bai and Waldfogel (2012), asking responders about the viewership of top box office movies from recent years (2011, 2012 and 2013). However, their sample included almost 30,000 individuals from six European countries, and the data was weighted to represent the internet using population. This approach was replicated again in the Ende et al. (2018) report, for films released in years 2015, 2016 and 2017, on a sample from 13 countries. In each case, the authors also found a displacement rate for the top films.

My approach is built upon the methods applied in the Waldfogel studies, but differs in three aspects. First, my sample is not restricted to students and is thus more diverse. It also focuses directly on comics readers. My sample is too small to be made representative of the internet population. However, comic books constitute a much smaller market than movies – a (very) rough back of the envelope calculation by Drum (2014) puts the share of comics-reading (in a year) millennials at 2%. As such, it seems more adequate to look directly at the readers and not the general population.

Second, my retrospective questions relate to only one month prior to the survey. Many of the surveys from the Waldfogel and Waldfogel-based studies required the students to remember their behavior over long periods of time, including several years. Such long periods might cause some of the responders to not fully recall whether and how they consumed a specific item. As such, my design might help alleviate this problem by referring only to the most recent acts. Admittedly, it might be easier to remember viewing a specific movie than reading a comics belonging to a series.

Third, the Waldfogel and Waldfogel-based studies rely on a longitudinal approach to control for any fixed effects like personal tastes and to assess the substitutability between the unpaid and paid channels. However, these studies often focused on a limited selection of top titles as it would be unfeasible to ask responders for a full list of consumed titles. As such, it is possible that the estimates of the substitution rate are biased by omission of information on slightly less popular titles that were bought (or downloaded) by the consumers in the same period. For example, a responder might be susceptible both to a budget constraint (allowing to buy only two DVDs per week) and a time constraint (allowing to watch only three movies per week). With such constraints it is likely that the viewer in week A will buy two DVD movies from the top 50 and pirate one movie ranked between 51 and 100; but then do the opposite in week B – pirate one movie from the top 50 and buy two DVD movies ranked between 51 and 100. In such a case there is no actual displacement, as in both cases the consumer used all of their budget to buy two DVD movies. However, observing only the consumption of movies ranked 1-50 would suggest that the pirate consumption in week B replaced the paid consumption. In my study, the focus is put on series of titles rather than on individual ones, with issues published in weekly or biweekly intervals. As such, titles consumed over several months are observed instead of unrelated products – as is the case in the Waldfogel and Waldfogel-based studies. This presents an advantage over applying such analysis to non-serialised goods, as readers are more likely to restrict their reading patterns to the same set of series over time. In a sense, a comics series can be thus viewed as a single item consumed over several weeks or months, with repeating decisions regarding how to acquire it.

⁶³ The study was first released as part of the Ende et al. (2015) report.

The most closely related was that of Tanaka (2016), which concerned the effects of piracy on sales in the Japanese manga market. Tanaka (2016) looked at a natural experiment, whereas the Ministry of Economy, Trade, and Industry funded a large project aimed at removing pirate copies of manga comics from the web via notice-and-takedown mechanisms. He controlled for the unauthorised availability to analyse how the reduced unauthorised availability of some of the comics affected their sales (relative to a subsample of titles not covered by the protection). Interestingly, Tanaka (2016) found two different effects, dependent on the type of the manga series considered – a negative effect for ongoing series, but a positive for series that have ended. This suggests that unauthorised distribution might carry promotional effects for older titles. It is, however, unclear to what extent the findings of Tanaka (2016) can be applied to the American comic book market, as the Japanese manga market is starkly different (as outlined in Section IV.1.1.).

Previous literature on the effects of unauthorised book file sharing might be partially relatable, but it is also scarce. Hardy et al. (2014) ran a controlled experiment similar to the one observed by Tanaka (2016). Working with a group of Polish book publishers they actively removed unauthorised copies of a sample of book titles, while at the same time observing a second sample without protection. They found no evidence of an effect of the unauthorised availability on print book sales. In a similar vein, Reimers (2016) analysed the effects of book protection on sales in print and digital channels, finding no evidence of displacement for print books, but a significant one for e-books.

IV.3.2. Analysis and results

Three separate approaches are followed to estimate the effects of unpaid acquisitions on purchases. In the first, the data are treated as cross-sectional to study the relationship between the authorised and unauthorised consumption over the full sample of three months of observations. However, previous research showed that this approach suffers from omitted variable problems, as, for example, responders more interested in comics might read more from both the authorised and unauthorised sources (see Waldfogel studies). When applying this approach, information from each survey about the individual readership of top-selling comics is used, with the additional inclusion of control variables on the general readership behaviour of the responders (self-described interest in comic books and frequency of readership; see Section IV.2.2.). For the second approach, a panel dataset is constructed with each responder observed over time. This approach allows for regressions with fixed effects to eliminate any potential effects of individual characteristics of the responders. Such approach was often applied in previous literature as superior to the cross-sectional one, even when individual characteristics were observed (see the Waldfogel and Waldfogel-based studies). In the third, the top-selling comics are instead treated as units of observations. In this case, the dataset is transformed to reflect sales (across the responders) of specific comics series, over the subsequent issues. In other words, a longitudinal approach is applied and comics-series fixed effects included.

Approach I. OLS with control variables for individual interests

Columns (1) and (2) of Table 13 report the results of the OLS regressions calculated on the full sample of responders from all three rounds. This base approach controls for the individual interest in comic books and reading frequency as an attempt to erase the potential effects of the individual characteristics affecting both the paid and unpaid consumption. The results suggest a negative relationship between the unauthorised consumption and the sales of physical comics, but no grounds to rule out null effects for the digital comics.

As only a subsample of the responders ever reads digital comics it is possible that those who do pay for digital comic books are also more likely to acquire them from unauthorized sources. In columns (3) and (4) the sample is restricted to responders who have in any round acquired a digital comic book (paid or unpaid). This shows a negative relationship of digital purchases and unpaid readership. The relationship with print purchases is also significant but becomes smaller than in columns (1) and (2). This suggests a decreasing displacement rate of print purchases with subsequent unpaid acquisitions or that consumers reading digital comics generally read fewer print comics.

Finally, in columns (5)-(8) the sample is restricted to include only the comics series with issues recurring over all three rounds and responders who participated in all rounds. This robustness check allows me to limit the potential biases stemming from changing populations in each round as well as from the unobserved consumption of titles not in the sample (those that did not make it to the top-selling lists). In principle, in columns (5)-(8) a fixed sample is observed over three periods and their consumption of a fixed set of comics series. The results are consistent with those for the whole sample, though the estimated effects are slightly larger.

Table 13. OLS regressions of the number of purchased comics on the number of unpaid comics and control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Comics	Print	Digital	Print	Digital	Print	Digital	Print	Digital
Reader types	All	All	Digital	Digital	All	All	Digital	Digital
Sample	Whole	Whole	Whole	Whole	Recurring	Recurring	Recurring	Recurring
Number of unpaid comics	-0.25*** (0.04)	-0.04 (0.03)	-0.16*** (0.04)	-0.20*** (0.05)	-0.32*** (0.06)	-0.03 (0.05)	-0.23*** (0.07)	-0.23** (0.10)
How often reads comics:	(base level: fewer than one per month)							
1-3 per month	0.22 (0.63)	-0.11 (0.31)	-0.50 (0.76)	-0.64 (1.00)	-0.45 (0.74)	0.42 (0.52)	-0.85 (1.37)	0.96 (1.97)
1 per week	1.08 (0.79)	0.65 (0.52)	0.29 (0.87)	1.18 (1.22)	0.63 (0.92)	1.66** (0.78)	-0.03 (1.21)	2.92 (1.93)
>1 per week	3.47*** (0.67)	1.42*** (0.44)	0.94 (0.70)	2.98** (1.20)	2.52*** (0.83)	2.00*** (0.68)	0.47 (1.18)	4.65** (2.11)
How much interested in comics:	(base level: not at all interested)							
Slightly	1.63** (0.74)	-0.21 (0.44)	-	-	-	-	-	-
Moderately	1.39 (0.96)	-0.24 (0.47)	-0.07 (0.85)	-1.10 (1.12)	-	-	-	-
Very	1.86*** (0.71)	0.37 (0.46)	0.31 (0.72)	-0.17 (1.07)	0.22 (0.57)	0.47 (0.52)	-0.04 (0.84)	0.52 (1.13)
Extremely	4.79*** (0.92)	0.37 (0.57)	2.52** (1.03)	0.23 (1.48)	2.79*** (0.85)	0.61 (0.88)	1.37 (1.02)	1.56 (1.85)
Observations	808	808	377	377	468	468	216	216
Responders	425	425	180	180	156	156	72	72
R-squared	0.21	0.05	0.17	0.14	0.24	0.07	0.24	0.18

Note: standard errors clustered at responder-level in parentheses. *** p<0.01, ** p<0.05, *p<0.1.

All regressions include dummy controls for gender, age groups and survey rounds.

The Comics row describes the channel of acquisition (i.e. print purchases or digital purchases). The Reader types row describes whether all types of readers are included or whether the regression only considers those who at any point acquired a digital comic book (paid or unpaid). The Sample row describes whether the regression considers the whole sample of readers and comic book series or only those that appeared in all three rounds of the survey (both comics series and readers).

Approach II. Panel OLS with responder fixed effects

Following the previous literature, a panel OLS regression is also run with responder-level fixed effects to control for other potential unobserved individual characteristics that could affect the results. Table 6 contains the results, following analogous specifications to those in Table 5. Notably, the negative relationship with physical purchases now becomes even more negative, while the relationship with digital purchases becomes statistically insignificant, even for the digital readers. However, it might be more accurate to say that the 95% confidence intervals indicate an effect on digital purchases ranging from -36% to 6%.

Table 14. Panel regression with reader fixed effects of the number of purchased comics on the number of unpaid comics and control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Comics	Print	Digital	Print	Digital	Print	Digital	Print	Digital
Reader types	All	All	Digital	Digital	All	All	Digital	Digital
Sample	Whole	Whole	Whole	Whole	Recurring	Recurring	Recurring	Recurring
Number of unpaid comics	-0.34*** (0.11)	-0.11 (0.08)	-0.34*** (0.11)	-0.11 (0.08)	-0.40*** (0.14)	-0.15 (0.10)	-0.40*** (0.13)	-0.15 (0.11)
Observations	610	610	312	312	468	468	216	216
Responders	227	227	115	115	156	156	72	72
R-squared	0.14	0.02	0.24	0.02	0.20	0.02	0.32	0.03

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.1.

All regressions include dummy controls for survey rounds.

The Comics row describes the channel of acquisition (i.e. print purchases or digital purchases). The Reader types row describes whether all types of readers are included or whether the regression only considers those who at any point acquired a digital comic book (paid or unpaid). The Sample row describes whether the regression considers the whole sample of readers and comic book series or only those that appeared in all three rounds of the survey (both comics series and readers).

Approach III. Panel OLS with comics series fixed effects

As a last robustness check, the unit of analysis is switched within the dataset to observe comics series and the consumption of their subsequent issues. A panel OLS regression with fixed effects is conducted to estimate the relationship between the physical and digital sales and the unpaid consumption. All the series with more than one issue in the sample (37 comics series) are included but the acquisition numbers are calculated only for the responders who provided answers in each round. Columns (1)-(2) include cross-sectional OLS regressions, finding a positive but statistically insignificant relationship between the unpaid and paid acquisitions. Adding comics-series fixed effects makes the effect for print large and negative and the effect for digital close to 0. The results corroborate the results from Table 14, with a similar magnitude of the substitution rate for print comics (-0.31 – see Table 15). There is no statistically significant displacement for the digital sales.

All in all, my results suggest that the unpaid readership in my sample displaces part of print readership. Assuming a 30-40% rate of displacement, approximately 6-8% of comics read by the responders were read from an unpaid source instead from a paid print one. From the perspective of sales, this means that the unpaid sources might displace app. 11-14% of print sales. On the other hand, the relationship with digital sales is less clear. My results do not allow me to rule out no effects, though the coefficients in most specifications are negative.

Table 15. Panel regression with fixed effects of the issue purchases on the number of unpaid issue reads and control variables

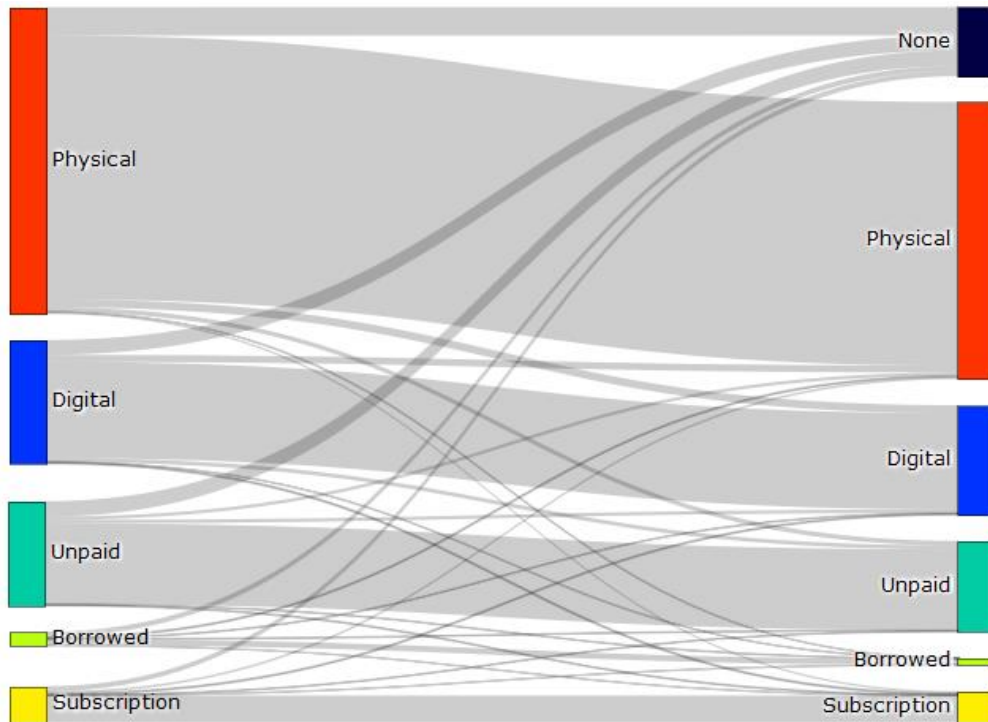
	Cross-sectional OLS		Panel OLS with series FE	
	(1) Print	(2) Digital	(3) Print	(4) Digital
Number of unpaid reads	0.50 (0.36)	0.29 (0.18)	-0.31** (0.15)	-0.00 (0.10)
Series year of start	1.04*** (0.13)	0.27** (0.10)		
Issue number	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Survey round:	(base level: survey round 1)			
2	-2.55*** (0.83)	-0.02 (0.43)	-2.95*** (0.41)	-0.03 (0.27)
3	-1.78 (1.06)	-0.27 (0.49)	-2.17*** (0.43)	-0.05 (0.28)
Sales (in logarithms)	14.77*** (2.22)	3.67*** (0.78)	3.33*** (0.98)	0.95 (0.65)
Price	-3.79*** (1.22)	-1.43*** (0.45)	-1.14** (0.57)	-0.25 (0.38)
Observations	142	142	142	142
Comics series	37	37	37	37
R-squared	0.65	0.42	0.43	0.07

Note: robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.1.

IV.3.3. Format switching, willingness to pay and channel choice

To better understand the choices of consumers and the substitution of print and unpaid digital comic books, Section IV.3.3. looks at the willingness to pay for digital formats and switching between formats. It is plausible that much of the switching to unpaid sources occurs due to high prices of digital comic books, effectively making the responders choose unpaid sources whenever they do not feel like paying the full price for a print copy.

Figure 30. Within-series flows between formats of subsequent issues



Note: The graph does not include the inflows from the 'none' category as this does not really inform on format changes among readers.

Source: Own elaboration based on the survey data. Graph created with the 'plotly' package in R.

Once consumers start reading a series in a specific format, they are unlikely to switch the formats midway. Figure 30 shows the within-series flows between different sources of the comic books. In general, print comics readers change the mode of consumption of a comics series to digital (paid or unpaid) only in app. 4% of the cases. Paid digital comics readers change the mode of consumption midseries to physical only in app. 6% cases and to unpaid digital only in app. 3% of the cases. Non-paying readers switch to any paid channels mid-series only in app. 7% of the cases. All three kinds of readers are more likely to stop reading a series than to switch channels of acquisition – print buyers stopped reading a series in 9% of cases, the digital buyers stopped in 12% of cases and the non-paying readers stopped reading a series in 15% of cases. Importantly, the low within-series mobility between issues was only partially reflected in the overall source differentiation among the consumers. Around 31% of the responders did not buy any of the comics in the sample in a print form and around 39% of the responders only bought the print forms. However, the remaining 30% on average acquired 20% of their comics in a paid digital format and 17% in an unpaid digital format.

The low mobility between formats might be explained by low willingness to pay for digital formats by the print readers. In the 2nd round of the survey, the responders were asked about how much they would be willing to pay for the digital issues of 20 recent titles from the top-selling lists (half of the readers were asked about a set of 10 comics and the other half about a different set of 10 comics). The titles were selected to include a variety of series from all three publishers, with various issue numbers (see the marked titles in Table B1). This information is used to check how the consumer decisions were related to the perceived valuation of the digital versions of the issues. A rational consumer would only buy a comic book if they perceived its value as higher than its price. However, as some of the responders have already acquired and read the comics on the list, it is likely that they have re-evaluated the content after reading it. Indeed, 38% of those who bought the comics in a digital form rated their perceived value as lower than its price (see Table 16).

Table 16. Valuations of the digital comic books, by actual source of acquisition

	Value		Value to price		Value > Price	N
	Mean	Median	Mean	Median		
Not acquired	2.5	2	0.65	0.58	21%	1701
All acquired	3.2	3	0.82	0.75	38%	289
Physical	2.8	3	0.71	0.75	25%	159
Digital	4	4	1	1	62%	68
Unpaid	2.7	2.3	0.67	0.6	27%	41
Borrowed	5	5	1.3	1.3	57%	7
Subscription	4.1	4	1	1	74%	23

Note: the Value columns show mean and median valuations of digital copies of comic books, depending on how a specific item was actually acquired. The Value to price column shows mean and median value to price ratios, while the Value > Price column shows the percentage of cases where indicated value was higher than the price.

Source: own calculations on the survey data.

As expected, those who read the comics in a purchased digital format (bought copy or subscription) gave the highest valuations for the digital issues. Those who read the issues in print formats gave much lower valuations, and only 25% of them indicated perceived values of digital issues as higher than their prices. Note that the prices of digital comics issues are the same as the prices for the print

comics, suggesting that a large majority of comics readers considers the digital formats as inferior. Finally, those who read the issues without paying for them indicated valuations only slightly higher than the valuations of those who did not read the issues at all. Only 27% of them indicated that they perceived the values as higher than the prices. Notably, this is a magnitude of the similar size as the substitution rate estimated in the previous section.

If taken at face value, these results indicate that among the responders of my survey, the comics publishers could achieve higher profits if they decreased the prices of the digital comic books. Indeed, the lack of mobility to digital formats could be partially explained by the readers' preference to stop reading a series rather than to pay the full price for a format perceived as inferior. A back of the envelope calculation suggests that a lower price for digital copies could incentivize enough non-consumers and pirates to purchase the digital copy that it would offset the losses due to lower prices. I make several assumptions to arrive at this conclusion. First, only the consumption and valuation of the 20 titles from the 2nd round of the survey is considered. This yields 10 valuations per each of the 199 of the 2nd round responders⁶⁴ – a total of 1,990 observations. Also, the observations where a comic book has been acquired only through borrowing or subscription are removed. This reduces the number of observations to 1,963. Second, the price for print copies is assumed to remain fixed at its original level and only the prices of the digital alternatives are manipulated. The changes in consumer decisions induced by lowering the prices of the digital copies by specific percentages are then considered. For all participants, it is assumed that if the valuation exceeded the price, they would have acquired the comic – even if they have not yet at the time of the survey. Moreover, it is further assumed that a fixed share of pirate acquisitions occurs even if the valuation exceeds the price, with the share equal to the one reported in Figure 28. Thus, for those who have already acquired an issue through an unpaid channel, even though they had a valuation higher than the price, it is assumed that they would not purchase the issue regardless of its price. Similarly, for those whose valuation becomes larger than the price when the price is lower, it is assumed that 27% of the profits would still be lost – i.e. that for this share of acquisition choices the readers would still choose the unpaid channel.⁶⁵ These pirate choices constitute the previously reported displacement.

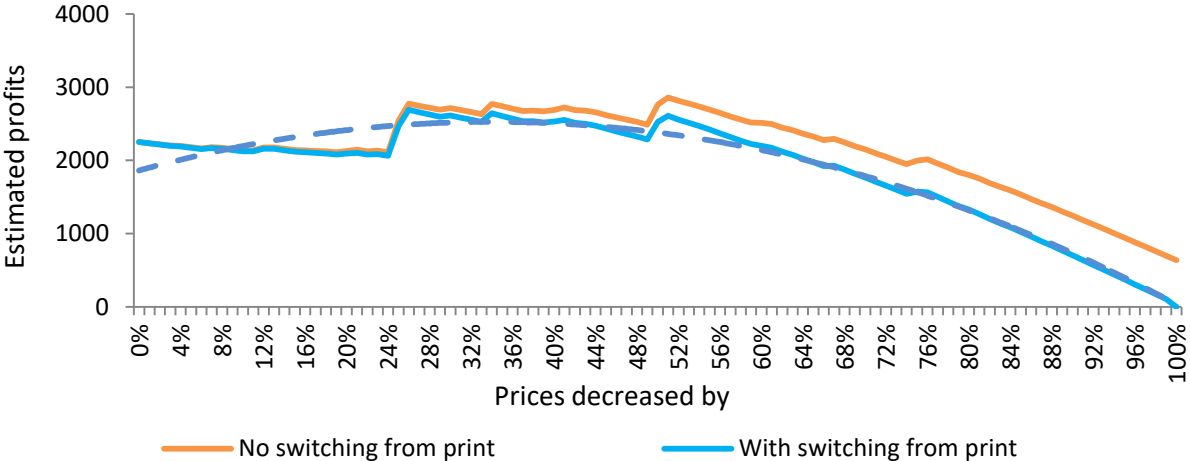
Thus, lowering the price will convert some of the pirates and non-consumers into digital readers, at the cost of the lower price charged for the purchased comics. Regarding those who acquired the titles in a print form, two scenarios are possible – an optimistic and a pessimistic one. In the optimistic scenario, those who bought a print version would never purchase a digital copy – no matter its price. In this scenario, lowering the price of the digital copy would not cannibalise the higher priced physical sales. In the pessimistic scenario, whenever the valuation of a digital copy is larger than its price, the consumer will switch to the paid digital channel. In such case, lowering the price of the digital copies will partially cannibalise the sales of the print comics. Thus, the two scenarios provide a lower and an upper bound to the effects of a price reduction of the digital copies.

Figure 31 shows the results of this exercise. In principle, the results indicate that a decrease in the price of the digital comics from app. 25% to app. 60% could increase the publishers' profits – at least among the sample of my responders.

⁶⁴ An error in the survey tool caused two of the responders not to see the list of titles for evaluation.

⁶⁵ This assumption likely biases the estimated profits from lowering the price downwards. It implies that a fixed share of people will choose a pirate channel instead of a paid one, even if they think the price is lower than the value. In the real world it is likely that they would be more willing to pay if the price was significantly below the valuation (e.g. close to 0).

Figure 31. Estimated profits for the 20 titles evaluated in the 2nd survey, after price reduction.



Source: own calculations based on responders self-reported behaviour and valuations.

IV.3.4. Incentivising switching to digital consumption

Only half of the responders ever purchased comics at the ComiXology store and the responders mainly read print versions. Moreover, they were slightly more likely to read digital comics from unpaid sources than from paid ones. I thus analyse whether overcoming some of the switching costs associated with using a comics distribution platform might change the further patterns of consumption among my responders. This sheds light on whether switching costs play a significant role in reducing the popularisation of paid digital comics among readers. As print and digital version of new comics issues are priced in the same way, any switching costs could hamper the switch to digital consumption and cement the readers as print readers. Still, if the readers consider the digital copies as inferior, overcoming the switching costs will not be enough to change their habits.

The switching costs associated with consumption from the ComiXology store are removed by providing strong incentives to make use of the service – from searching its catalogue to acquiring specific titles. It is done by using the randomly assigned prizes after each survey. In the following analysis the information about the prizes is utilized to calculate their potential effects on consumption behaviour. The first kind of prize was based on the own choices of the responders. Only few of the responders asked for comics from the top-selling lists. They were also more likely to ask for trade paperbacks or graphic novels that were often priced at close to the €10 limit. For example, after the last survey many responders asked for the at-the-time discounted Marvel comics collection *Thanos* (priced at €9.99) about the main villain of the blockbuster movie *Avengers: Infinity War* – premiering in the cinemas in that month. The second kind of prize was based on my choice, whereas I provided a sample of responders with comics that they have not read before (as inferred from their answers in the survey). This second kind of prize did not require from the responders to get acquainted with the platform. Rather it was meant to see if a giveaway of this kind could incentivise the readers to follow a specific comics series (by reading the subsequent issues next month).

For the first type of prize, the following steps were taken:

- 1) E-mails about the prizes were sent, with winners asked to choose a set of comic books with cumulative price of up to €10.

- 2) Making the choice required from the recipients to browse through the ComiXology catalogue and pick a set of titles (or a one more expensive title) so that the prices summed to less than €10, and subsequently send the list to me.
- 3) I purchased the listed titles and sent them as a gift purchase to the recipients.
- 4) To redeem the comics, a recipient had to register an account and to read them using a mobile device, the recipient had to download a ComiXology reader app.

The subsequent steps ensured that the recipients paid several of the switching costs described in section I.3.4. In step 2, the recipients acquired information about the ComiXology service, including the scope of its catalogue, prices and ease of use. In the process they have also incurred at least some of the learning costs associated with the usage of the ComiXology store. They have thus incurred some of the *evaluation* and *learning* switching costs. In step 4, the recipients needed to conduct the registration process, download and install the ComiXology app and put the effort to set it up (and its settings). Thus, they have incurred some of the *setup* costs. Finally, receiving free comics at a digital service might increase customer loyalty to the service, partially because of the growing catalogue of owned items at the virtual bookshelf of that service.

On the basis of these potential effects, several effects of the prize treatments are considered – here formulated as a set of hypotheses.

A straightforward effect of incurring the switching costs would increase the total utility from purchasing digital comic books. Such an effect would translate into an increased propensity for buying digital copies, and a lower propensity for acquiring the unpaid versions. Thus:

H_{1A}: Receiving a self-selected bundle of comics increased the subsequent consumption of paid digital comics.

H_{1B}: Receiving a self-selected bundle of comics decreased the subsequent consumption of unpaid digital comics.

Increased familiarity with the ComiXology service could incentivise the readers to stop following series using unpaid sources and instead read the subsequent issues through purchased digital copies. At the same time, a higher loyalty to the authorised channel could lower the chances of switching mid-series to an unpaid source. Thus:

H_{2A}: Receiving a self-selected bundle of comics increased the chances of subsequent switching from the unpaid versions to paid digital versions mid-series.

H_{2B}: Receiving a self-selected bundle of comics decreased the chances of subsequent switching from the paid versions to unpaid digital versions mid-series.

It is possible that readers generally prefer to read entire series in one specific format and from one specific source. In such case, overcoming switching costs could not be enough for a reader to stop collecting a series from a paid store if their previous issues are acquired from a different source. Thus, the effect of the prizes might be more visible for the choices regarding new series (first issues):

H_{3A}: Receiving a self-selected bundle of comics increased the chances of subsequent starting of a new series with a paid digital version.

H_{3B}: Receiving a self-selected bundle of comics decreased the chances of subsequent starting of a new series with an unpaid digital version.

The increased utility of digital comics purchased through ComiXology should also be reflected in a higher willingness to pay for digital versions of comics in general. Thus:

H₄: Receiving a self-selected bundle of comics increased the willingness to pay for digital formats.

Finally, the second type of prizes does not directly affect any of the switching costs, but might increase the chances of the readers getting 'hooked' on specific series. Thus:

H₅: Receiving a previously unread digital comic book issue increases the chances of the reader acquiring (from any source) the follow-up.

Hypotheses 1-5 are tested in columns (1)-(5) of Table 17, respectively, using OLS and Logit models:

- Column 1, panel OLS with responder fixed effects: change in the total paid digital or total unpaid consumption.
- Column 2, logistic regression: change in the probability of switching from paid digital to unpaid (or the other way round) mid-series.
- Column 3, logistic regression: change in the probability of picking up a new series (issue #1) from paid digital or unpaid channel.
- Column 4, OLS regression: change in the willingness to pay for digital formats.
- Column 5, logistic regression: change in the probability of acquiring a follow-up to the received comic book issue.

Table 17. Effects of prizes on subsequent consumption decisions among the survey responders.

Prize	Comic set chosen by the responder						Unread comic	
	Panel OLS + FE		Logit (odds ratios)		Logit (odds ratios)		OLS	Logit
Model	(1) Total		(2) Switch		(3) New series		(4) Valuation	(5) Follow-up
Channel	A. Digital	B. Unpaid	A. Digital	B. Unpaid	A. Digital	B. Unpaid	Digital	Acquisition
(Without additional control variables)								
Being a winner	0.18 (0.24)	-0.15 (0.19)	1.72 (1.31)	0.13** (0.12)	0.92 (0.50)	0.39 (0.24)	-0.08 (0.39)	-0.67 (0.59)
Observations	613	613	615	723	5,667	5,667	1,990	1104
Responders	228	228	74	68	349	349	199	184
R-squared	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
(With additional control variables ^x)								
Being a winner	0.34 (0.33)	-0.36 (0.35)	0.88 (0.60)	0.05*** (0.05)	1.05 (0.65)	0.34* (0.21)	-0.29 (0.36)	-0.62 (0.62)
Observations	613	613	290	383	5,477	5,394	1,980	1044
Responders	228	228	32	37	336	331	198	174
R-squared	0.00	0.01	0.11	0.23	0.09	0.09	0.12	0.07

Note: robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.1.

^xWhere possible, the regressions include control variables for the survey rounds (dummies), being a female, age (dummies), interest in comics and frequency of reading.

The results show no robust effect of the prizes on subsequent responders' consumption behaviour. The first column indicates a positive effect on digital purchases and a negative on unpaid acquisitions, but the results are not statistically significant. Column 2 suggests that the prize winners were less likely to switch from digital to unpaid channels mid-series. However, there is no simultaneous increase in switching from unpaid to digital channels. There is also no statistically robust effect on the probability of picking up a new series and no effect on the willingness to pay for digital format. Finally, there is no statistically significant effect of gifting an unread comic book on the

subsequent probability of its consumption by the readers. Thus, it is concluded that overcoming the switching costs was not enough to incentivize the responders to switch to the paid sources. One interpretation is that the switching costs were low and that the readers consider the digital comics not worth their price, even after the switching costs have been accrued.

IV.4. American comic book market in the XXI century – summary

This study constitutes the first thorough investigation of how the American comic book market changed in the times of digital transformation. To this end, data from numerous sources has been compiled and overviewed to cover the many dimensions of the comic book markets – including the comic book culture, fandom, comic book stores and chain stores, different formats, publisher strategies, reader demographics and many more. Finally, new data collection in the form of automated web scraping and a new survey was conducted that allowed to study several of the issues in-depth, including the digital readership and unauthorised sources. This is also the first study to measure the displacement effects of unauthorised readership on the American comic book market.

The end of the XX and mostly the XXI century introduced new formats to the comic book market. These came in the form of webcomics and digital comic books. The latter have quickly grown to app. 10% of the market but have since stopped growing further. At the same time print formats have been growing. Notably, the growth has been mainly driven by graphic novels and trade paperbooks, whose sales shifted from local comics stores to chain and online retail. The growth in comic book sales have occurred both at the top and the bottom of the distribution. The sales in the long tail have been increasing. However, the sales of the top American comic book publishers have been growing even faster – solidifying the position of DC and Marvel on the comic book market.

As the comic book market evolved, so did the fandom in general. The population of fans has grown from a small number of comics-enthusiast to a large and diverse population of people interested in various forms of comics-based content. Notably, the fandom has been increasingly gender-balanced and now includes numerous casual readers. The new readers also differ from the core audience in terms of how they acquire their comic books – relatively more likely from chain stores, online retail and digital formats and relatively less likely from traditional comic book stores. Still, comic book store owners also note a growing diversity of their customers. As an answer to these developments, the top comic book publishers introduced changes to their publishing strategies. Notably, they increased the number of variant covers, frequency of story reboots and the diversity of their heroes.

The digital comic books are considered inferior by the print readers. A survey of comic book readers from Reddit revealed that they consider digital copies largely inferior to the print versions. Combined with the high price (same as for the new print issues) it makes it unlikely for print readers to ever switch to digital purchases. Notably, a simulation based on the data from the survey revealed that a reduction in price of the digital comics could motivate some of the readers to purchase them – potentially leading to an increase in revenues from the surveyed group.

Still, as indicated by results of the panel survey, digital comics seem to have a few advantages over their print counterparts. As they do not take additional space (they can be stored on smartphones and tablets), they are more likely to be read at schools and universities, during daily routines and in transit. Digital comic books seem to at least partially provide additional capabilities for the readers.

The panel survey also found that comic book readers often read comic books acquired from pirate sources and that this partially displaces print comics sales. A possible interpretation here is, that comic book readers who are reluctant to pay the full price for a print copy, turn to unpaid sources instead. In such case, a reduction of prices for digital copies could convert some of these readers to paying customers by offering them a lower valued alternative for a lower price. As many of the comic book series interconnect and drive stories important for a larger comic book universe, some readers might turn to the unpaid channels just to keep up with the story – even if they do not want the title on their bookshelves. This provides potential for allowing these customers to pay a much lower amount of money for these comic books in a digital form.

Finally, switching costs alone cannot explain the reluctance in acquiring digital comics. The readers participated in the survey and were open to acquire digital comics as a reward. However, while the survey designed made these readers register and use a digital service (thus incur some of the associated switching costs), it did not carry any long-term effects on their readership patterns.

The following chapter provides a discussion of these developments in the light of the processes and relationships described in Chapters I-III.

Chapter V: Discussion

V.1. Similarities with other creative industries

Like with music, films or books before, digitization introduced new formats of comic books to global markets. Also, similarly, the new formats were practically weightless (a digitized comic book issue takes only a few MBs of digital storage space). This meant that any computer or subsequently mobile phone and tablet could store a room-worth collection of titles. With the development of reader apps, this evolved even further, allowing the readers to store their collections in the cloud and only download specific titles to their devices if they needed them at a given moment. The digital copies are seemingly perfect in the sense that they contain the highest possible quality of the images and might surpass their print counterparts by allowing high-quality zoom ins beyond the size of the paper version. As evidenced by the results of the survey, they also provide opportunities for reading in spaces such as transit or schools/universities, where carrying print comics could be inconvenient.

Notably, for comic books the formats mostly entered official distribution only in 2007. On the one hand, this might seem late in comparison to, for example, music. Indeed, both music and comic books can be digitized as small files, allowing for easy access over the internet (the later introduction of digital movie distribution channels can be explained by their relatively large size). One explanation is that before 2007 there were no convenient ways of consuming the digital versions of comic books. A digitized version would not reach success if it required a reading device larger than the original print version (e.g. in the form of a personal computer or laptop). However, in 2007 the first iPhone was released, and the new era of mobile devices began – equipping virtually everyone with handy mobile reader devices that could serve to consume countless of comic books. This change, combined with the small size of comic books and development of internet, allowed for the comic books to become accessible at all times, in an instant and from any place.

Digitalisation opened two new distribution channels: that of online retail and that of digital services. Beyond the abovementioned advantages of the fully digital channel, both channels opened the market and allowed it to move beyond the specialty comics stores. This is especially important, as the comic book market is characterized by numerous series titles spanning large numbers of issues, while the specialty stores can only boast limited shelf space. As such, it was previously difficult to acquire older titles as well as to acquire titles less popular or from indie labels. Online retail and digital distribution allowed anyone to access any title – whether in print or digital format.

As in the case of other creative industries, the digital intermediaries could leverage their consumers' data to fortify their positions as comics distributors. While many publishers introduced their own digital channels, they have not succeeded against the newcomers. The most important of these newcomers is the ComiXology store, which distributes digital copies of content from numerous publishers and therefore aggregates the market. The diversity of the titles on offer allows ComiXology to boast a richer and more comprehensive catalogue than any of the publishers alone. ComiXology has been also investing in providing the best user experience possible, for example by providing numerous features to its reader app and by entering DRM-free distribution of comics in 2014 (Welch, 2014). The latter allowed readers to create backups of their acquired comic books for offline readership. Notably, DC and Marvel comics are excluded from this offer, as many publishers are reluctant to become DRM-free. Moreover, in 2014 ComiXology has been acquired by the online

retail and media giant Amazon, solidifying its connection to distribution of print titles as well as equipping it with sophisticated algorithms for matching content with consumers.

ComiXology introduced two forms of comics rebundling. One form of this is for the digital sellers to create bundles of issues (typically connected by a central theme, publisher, series title or groups of heroes). These bundles are typically offered at lower prices than if the readers aimed to buy the items separately.⁶⁶ Moreover, ComiXology launched its subscription service (ComiXology Unlimited), effectively rebundling the comics titles in its catalogue.⁶⁷ According to data disclosed by the ComiXology CEO – David Steinberger (Salkowitz, 2017), subscribing to ComiXology Unlimited increased customer's reading frequency by 58%. Moreover, 87% of subscribers said that the service helped them discover new things and 74% claim that the subscription encouraged them to try new genres. These numbers highlight the importance of personalized recommendations and content discovery, which Steinberger attributes to Amazon:

“Steinberger says the newest initiative is around affinity marketing, using data and Amazon's machine learning systems to personalize recommendations and help readers discover content they'd like, if only they knew about it. Amazon refers to it as creating 'diverse and inclusive connections between books and people.'” – David Steinberger, CEO of ComiXology (Salkowitz, 2017).

These outcomes also contribute to lock-in effects for the digital intermediaries as switching to different providers would entail having to install, configure and learn to use a different reader app, as well as to start a new digital collection (separate to the previous one), and to lose the user history already provided to the incumbent distributor. From the point of view of publishers, ComiXology became the dominant intermediary, ensuring that even the publishers with own digital distribution prefer to distribute their titles through ComiXology and thus to pay a small fee for the sold comics.

Internet and digitalization allowed for new ways of comics monetization to emerge and for artists to promote their work. Like Amazon for books and recently Spotify for music, ComiXology allowed for self-publishing of comics. While the digital format is the default format for these titles, ComiXology also offers a Print on Demand option for print enthusiasts. This new development breaks the dependence on publishers who often retained many of the rights to the published titles. At the same time, it equips the indie creators with audience discovery tools, helping them in monetizing their creation. These recommendation algorithms contribute to the emergence of numerous new digital artists. In the first year of their self-publishing program, ComiXology hosted more than 1,000 self-published titles, which jointly were able to rank 6 in overall downloads in the service and 10 in gross revenue among publishers (DiChristopher, 2014).

The internet also allowed for numerous webcomics to exist and to acquire money indirectly (through ads or merchandise) or from crowds (patronage and crowdfunding). Many of these webcomics

⁶⁶ See e.g. <https://www.marvel.com/comics/unlimited> (accessed: 2019-03-20).

⁶⁷ Notably, the scope of the ComiXology subscription package is limited by the agreements signed with publishers. For example, many of the titles in ComiXology subscription package include only the first issues and volumes in an attempt to monetize further episodes in direct sales. Publishers themselves also limit the scope of their subscription packages, as e.g. Marvel offers access to all comics but with a half a year of lag after their initial release. Such model ensures that the subscription models do not compete with sales of newly released titles.

emerged from amateur creators or from creators who only developed their final styles along the way, even if their art creation has been a part-time job. The emergence of these artists can be attributed to the emergence of Culture 3.0 across different art forms.

Taking a page from the audiovisual digital distributors, ComiXology also started its own ComiXology Originals series. These comics are often exclusive to ComiXology but available as part of the subscription packages that are heavily marketed as the go-to mode for reading the Originals. Some of the Originals series are also released with all issues at once, allowing for binge reading – much like Netflix does for many of its Original TV series. The continuous inflow of digital exclusives might increase the lock-in effects associated with ComiXology, especially if the service succeeds in sustaining a constant inflow of high-quality exclusive productions – much like the strategy currently adopted by the major streaming services.

Finally, much like for other types of content before, piracy of comic books emerged. Initially it constituted more off a digital preservation process, with actual consumption options far from that of print comics. This is because the first unauthorised copies often required software to download (e.g. through torrents), software to read and a computer. Eventually, however, comics piracy shifted directly to internet browsers, eliminating most if not all of the initially associated switching costs. While there are no reliable statistics on the pirate consumption of comics, data suggests that it is quite common. 25% of ComiXology readers admitted having downloaded pirated comics in 2013, but more than 70% of my survey responders admitted to having downloaded or read a pirated copy. The recorded traffic for a major comics-sharing website surpasses that of ComiXology more than fivefold.

The study conducted in this thesis confirms that much like other creative industries, the sales in the comic book market are negatively affected by the unpaid consumption. Across my sample, the print purchases could have been up to 11-14% higher in the absence of unauthorised sources. While the results show no significant relationship with digital formats it is likely that this result is affected by relatively low digital consumption in the studied sample. Alternatively, the digital sales might have not been affected as pirate consumers consider digital comics as overpriced (see next section).

In summary, most of the processes that have been driven by digitisation and occurred for other creative industries have also taken place for the American comic books. This comprises new formats, channels, creators, intermediaries and forms of creation as well as the displacement from piracy.

V.2. Differences to other creative industries

For other creative industries, the same combination of changes induced by digitalization caused a disruption of distribution channels and consumption patterns. The competition from piracy forced the incumbent majors to shift to digital formats and channels. Along the way, they have released much of their market power to digital intermediaries and to independent creators. This shift resulted in decrease of brick and mortar stores dedicated to music, book and audiovisual content.

However, the incumbent channels of the comic book industry have shown gradual growth over the recent years. Despite the competition from piracy and introduction of digital formats, the market retained its dedication to physical print versions. Digital intermediaries arrived in the form of Amazon-powered ComiXology and generate new income, but they did not prevent the print channels from growing. Indeed, the number of comics stores has been on the increase in the recent years,

despite online retail and digital distribution. While the revenues of independent publishers and self-published work have been growing, the same happened for the top of the distribution and two industry majors (DC and Marvel), who have grown even faster.

These differences can be broadly described as driven by three key developments. The first is that the digital formats are largely considered as inferior by the previously core target audience of comic. The second is the sudden elevation of the comics readership from a socially stigmatised hobby to more of a mass market entertainment, additionally boosted by entirely new audiences. The third is the shift in the strategy of comic book publishers to cater to specific audiences.

Free (but high-priced), instant (but with DRM), perfect (but with no collector value)

In both the music and audiovisual industries, digital formats presented clear advantages over their predecessors. They still could be consumed over TV screens, speakers or headphones, but extended the range of potential devices and the amount of content they could carry. They have also offered similar or higher quality of the content itself, by being immune to carrier damage (e.g. scratched CDs or damaged tape) and quality loss because of copying or wear and by allowing to store more information in a smaller format. Electronic books have been more limited in that the readers were no longer able to, e.g. quickly browse through the pages. They did offer, however, other ways of searching the books and acquired a significant market share in the US.

The case for digital comic books is not as obvious. First, despite the Guided View system and codification of the comics frames, mobile screens offer less convenience when viewing large scenes – especially those encompassing two pages of the print version. Second, the digital comic books lack a collector value, which is often cited as precious among the readers. As previously stated, Woo (2012) categorised comic book consumers as readers or collectors, with the latter group consisting of hobbyists, completists or speculators. It is difficult to pinpoint the exact shares of each of these groups among the actual reader population. However, an early study by Tankel and Murphy (1998) surveyed 37 comics store-goers about their purchasing and collector behaviour. They found that almost all of the buyers invested in items that helped preserve comic books or curate a comics collection⁶⁸ – indicating that most of the buyers in the stores were indeed collectors and not casual readers. More recently, Woo (2011) wrote about comic book stores as points fulfilling several purposes beyond the actual sales of comic books. Mainly, they also constituted social hubs, with most customers also coming to interact with other readers and storeowners themselves – among others to discuss exchanges and collections. Steirer (2014) lists specific factors related to collecting that provide value to collectors but are absent in digital distribution, including ability to curate content, exchange items and showcase them to others.

The findings of my survey indicate that the print comic book readers do consider the digital copies as inferior. Only a small group of my responders purchased any digital copies from the presented titles. On average, these responders attributed a value equal to the price of the digital issues. However, those who read print versions, or the unpaid versions considered the digital copies as of significantly lower value than the price. This is despite an equal price of print and digital issues – implying that the readers were willing to pay significantly less for the digital formats than for the print ones. The surveyed readers were also very unlikely to switch between formats once they started reading a

⁶⁸ Specifically, 84% of the responders purchased comic bags, 60% comic boxes, 36% backing boards, 21% mylar sleeves, 13% title dividers and 10% labels.

comic book series in a specific format. These results emphasise that the current prices for digital comics are too high for traditional readers to consider purchase. A group of comics enthusiasts at the Comic Vine forums discussed the potential advantages of digital comic books, with two key themes emerging: a lower collector value of digital formats and prices that were too high for print readers. Admittedly, some of the participants acknowledged the potential of digital comic books but waited for the prices to go down (thecomicscove, 2012).

The high prices for digital formats contribute to a relatively high engagement in unpaid consumption. Only 27% of the surveyed readers have never read a comic book issue from an unauthorised source. Moreover, most of the readers who acquired a comic book without payment had a positive willingness to pay for the digital copy of the title, but lower than its price. This showed a simple relationship: most comic book readers were either willing to purchase a print copy or – if they had lower valuation than the full price – turned to piracy instead. My results suggest that at least among my reader sample, a reduction in digital prices could have incentivised some of the readers to purchase digital formats instead – potentially increasing the overall volume of money spent on comics across the surveyed group. My results also show that the lack of interest in the digital distribution cannot be attributed to switching costs associated with the relatively new mode of consumption.

In result, unpaid consumption displaced some of the print sales but was not enough to push the industry toward digital formats. This is mostly because the digital formats are treated as a substitute for print experience only for a relatively small number of cases when the comic book valuation is below the price of a print copy. Additionally, the official app-powered digital comics target an audience whose specific intent is not to own a print version instead of readers in general. As such, most of the readers choose between high-valued print formats and low-valued but free formats. Because of their lower value but high price, the official digital formats cannot serve as a middle option, despite their perceived inferior nature.

Still, the high volume of pirate consumption suggests a large audience with no intention to pay for any of the formats available at the official market. More research is needed to establish the exact relationship of this consumption with the digital sales of comic books and to analyse whether lower prices could introduce these readers to a legal market.

Finally, for those publishers who cling to DRM solutions, the downloadable pirate formats might actually be considered of higher value by some in the community. As mentioned by members of both the scanner community and readers themselves (e.g. thecomicscove, 2012 or Lawson, 2013) the DRM-using digital services do not offer any guarantee that the content that was paid for remains available over time. Thus, despite the easy and instant access to legal digital copies, their value is additionally deteriorated as they are offered as a service and not actual item. It is unclear whether digital comics can carry any collector value to the buyers, but if yes, DRM would eliminate it. Steirer (2014) highlights DRM as one of the reasons that a collector value for digital comics is absent.

From niche to mass market

One of specifically distinct features of the comic books (relative to other creative industries) was their niche nature. Other creative industries typically encompassed both the mainstream popular culture (e.g. pop music superstars known and listened to at parties around the world) and the niche (e.g. indie experimental bands with small audiences). The comic book industry, on the other hand,

has been typically restricted to relatively small population of readers. While some characters have been generally known – like Batman or Spider-Man – few people could actually distinguish between the Marvel and DC universes of superheroes.

For other creative industries, digitalisation has been shown to unequally favour the lesser known creators. This has been evident through the emergence of the long tails and their growth in importance relative to the major labels. While long tails and independent artists have gained new ground in the comic book market as well, comic books across the spectrum seem to have benefitted by the rise in the popularity of comic books as a medium.

The popularisation of the comic book heroes and their move to mass culture drove several developments that contributed to the growth in comic books consumption. First, it introduced the characters and stories to new audiences, enlarging the reader pool (even if mostly with casual readers). Second, it affected the publishers' business models as they shifted to larger numbers of movie tie-ins and strategically planned release dates of their series. Third, it lowered the social stigma associated with the knowledge of and association with comic books.

As described in Chapter IV, the generally defined fandom has been growing, with the fandom events having become large celebrations of more than just comic books. Instead, comic cons have become the meeting point with creators and actors who tell comics-based stories through other media such as films, TV shows or video games. They have also become a place to connect with other like-minded fans and to be the first to learn about new plans of the major production studios.

Notably, only a small minority of the current comic convention participants report comic books as their main focus, but a significant share says they read comic books at least from time to time. This shows that the comics-based media, such as the cinema blockbusters, have created a new audience of casual readers, whose growth has been rapid. At the same time, the comic book fans now benefit from a wide range of products developed on the basis of their favourite stories – most of the readers surveyed in this study were heavy consumers of superhero movies, TV shows and video games.

The success of the comics-based movies has been so large that the top comic book publishers have adjusted their publishing schedule around the relative cinematic universes. The current common approach is to reboot character-driven series around the time of a new film release, or produce cinematic universe comics tie-ins. The reboots allow for new readers to jump on the ongoing series, while the tie-ins invite the most eager fans to expand their knowledge on the events surrounding those described in the movies. With the increasing rate of comics-based movies, this means continuous promotion for the comics channel – at least for Marvel (there were 6 movies based on Marvel comics in 2018, 4 in 2017, 3 in 2016; but 'only' 1-2 DC-based movies per each of these years).

Finally, another potential effect of comics stories becoming more mainstream is the reduction of social stigma associated with reading comics. Several sociological studies (and numerous blog posts, forum discussions, etc.) point to the existence of social stigma associated with reading comic books, whereas the comic books were considered as not serious and for kids. E.g., Lopes (2006) wrote:

“The basic fanboy’s social identity is discredited generally as asocial—poor interpersonal skills, lack of intelligence and lack of self-esteem. But this also translates into social roles as fanboys are viewed as poor students, poor partners, or poor workers. ‘Geek’ is a common pejorative used within the

subculture of comic books as a self-identification of fans as failures in the eyes of normals.” – Lopes (2006, pp. 406).

Lopes (2006) notes that fan conventions provide opportunities of community membership to stigmatised readers (similarly, Woo, 2012; described comic book stores as safe spaces where readers could focus on their hobby with no feelings of social exclusion). Lopes (2006) also notes that the social stigma might have suppressed the earlier development of comic book art form to more ‘adult-oriented’ topics. However, he also notices that the recent increase in the popularity of graphic novels might indicate a break from the social stigma and expansion to new genres. Finally, Lopes (2006) notes that the popularity of comics film adaptations helps in reducing the social stigma and achieving recognition across the population. This last finding is also confirmed in interviews with female fans, conducted by Orme (2016), with many of them claiming that the popular film adaptations helped them overcome the stigma and be more open about their enthusiasm for comic books.

Moreover, parts of the stigma became easier to avoid with the appearance of digital channels. Online retail provided access without actual visit to a physical store. Digital formats provided non-physical purchase options but also an option to read comics publicly without showing them. These developments have been particularly important for female audience who were stigmatised in three ways: first, by the society views on comic books; second, because of comics being considered ‘masculine’ entertainment (despite a growing share of women in fandom); and third, because of non-serious treatment from male fans who considered female readers exotic (Orme, 2016). Thus, the female audience may have gained most from the growth of fandom and digitalisation.

Notably, one recent study suggests no long-term effects of the comics-based movies on single-issue comics sales. However, its conclusions are in fact very limited. Hionis and Ki (2018) look at the sales of comic book series of the same title as premiering cinema movies. They conclude that a release of a comics-based movie contributes to only a short-term ‘bump’ in related comics sales, but no long-lasting effect. To show this, they use the data of Comichron (also used in parts of this thesis) and run a regression of single-issue sales before and after a movie release, with the movie release acting as an explaining variable. Their study, unfortunately, is described in a confusing manner and raises many questions about their chosen approach. Moreover, even if treated at face value, its conclusions allow for only one specific path of popularisation from comics-based media (permanent shift in titles directly related to movies). As such, they do not contradict the findings of this thesis (for a more comprehensive critique of the Hionis and Ki, 2018 paper see Appendix C).

A shift in the target audience of comic books

Another distinction in what happened in comic book industry is the shift in the target audience of the top publishers. For other creative industries, the move to other types of audiences has been rather driven by digital intermediaries and new formats - e.g. TV channels remained constrained to the decreasing TV audience, while streaming services catered to more elastic and connected viewers. However, in the comic book industry, the top publishers have conducted three major shifts in their publishing strategy. The first, is the gradual increase in the number of variant covers to raise the collecting value of the sold issues. The second, is the increase in reboots and short-term story arcs – typically focused on the old and classic characters – to provide jump-on points for first-time and casual readers. The third, is the increase in representativeness of minorities across comic book titles.

The strategy of introducing cover variants is reminiscent of the past speculation boom and bust, whereas large numbers of speculators invested in special issues in the hope of reselling them at higher prices. This skewed the actual interest in comic books, as many of the buyers were actually interested in the issues only as an investment. The publishers increased the numbers of unique variants, which sparked a downfall of the comic book industry as the value of new material eventually went down. However, currently – more than 20 years after the speculation bust of the 1990s – the number of cover variants introduced by the publishers has been gradually increasing again. The return to variant covers seems risky in the light of the previous speculation boom. At the very least it shows that comic book collectors – also those in the form of speculators – have become an important audience group for the publishers.

At the same time, however, publishers seem to be increasingly targeting new, casual and short-term readers. Indeed, the emphasis on new or rebooted series shows that publishers earn an increasing share of money from casual readers – the print sales have been mainly driven by a shift to graphic novels in chain stores – instead of from long-term collectors and comics fans who would rather continue the series they already know. This means that the traditional audience has indeed decreased, but also that the new audience is more short-term and likely to abandon comic books or shift to other channels after a while. As the emergence of this type of audience is likely the product of comic book popularisation through other media, it remains to be seen whether it is sustainable in a longer run (e.g. once the popularity of comic books and the decrease in stigma reach their limits). This move is also evident by the increased reliance of the top publishers on their back catalogue. In the recent years, the publishers largely shifted from introducing new characters to focusing on new stories on their old, classic and more popular ones.

Finally, the top publishers have been increasing the diversity of their characters. This diversification first focused on an increase in new female and African-American characters. However, the recent years have also seen a rapid increase in the number of LGBT characters, as well as Asian-Americans. The increased variety seems to be growing on the observation that the fandom and comics readers have largely diversified, especially with the emergence of online sale channels.

The increase in the collector value affects only the sales of single comic book issues. However, the reboots and growing diversity of characters can also contribute to the longer and digital formats.

V.3. A disruption in the making

The comic book market faced similar challenges as other creative industries in the age of digital disruption. However, by a combination of unique features, popularisation, strategic shifts and relative low quality of digital formats it managed to avoid the disruption that shook other industries. Still, there are valid concerns that the disruption has not been avoided but at best delayed.

Digital formats are gaining speed

Despite the stagnation in the growth of digital channels revenues, many developments hint at their further growth in importance – for one, the estimates of the size of the market might be inaccurate. The available digital sales data are in reality only an approximation of the actual sales, as distributors such as ComiXology do not share any direct data on their revenues. Across the sample of my responders, paid digital formats constituted approx. 27% of the purchased comic books – a figure three times as large as the share reported in Comichron and ICv2 estimates.

Even if digital sales were not to grow further, subscriptions constitute a separate, large and developing channel. The estimates of the digital market do not include the ongoing subscriptions. However, ComiXology puts large emphasis on its subscription service. Marvel, whose comics provide the source material for the largest cinematic franchise in history, has a subscription service of its own. Moreover, DC Comics launched their own subscription program just recently, and bundled their comic book titles with TV and film content.

Moreover, ComiXology is currently following its successful counterparts from other industries. Like Netflix, ComiXology started with a functioning connection to the physical market – Netflix began as a DVD-rental service, while ComiXology started by providing management support for print subscription services and distribution to the direct market. Like Spotify, ComiXology allows creators to self-publish their work – omitting deals with traditional publishers. Like Netflix, the service now invests in own, exclusive Originals. Both of these developments are only recent. Importantly, ComiXology does not force the abandonment of print formats and offers Print On Demand options as well for the readers. With openness to independent creators, ComiXology starts building its position as a sole provider of numerous titles, including many exclusive ones.

Price has played a major barrier in the shift to paid digital channels, but this might change. First, with the further popularisation of subscription channels, the barrier of issue price slowly becomes irrelevant to digital consumption. Second, as ComiXology catalogue of comic books becomes independent of other publishers (with the growth of Originals) and particularly the top two (with the growth of independents and self-publishing) it will be increasingly able to leverage the price of the items to maximise its own profits. Moreover, this will come mainly at the cost of the major publishers who refuse to lower their prices below those of their print analogues. The major publishers are also disadvantaged as ComiXology gains a fee as it sells their titles. As such, the ComiXology Originals are much more flexible in terms of management and profit-maximisation – also by lowering of the prices.

Finally, the popularisation of comic books has greatly increased the diversity of audiences and ComiXology stands to gain most from it. This is because the ComiXology Originals are not subject to the major constraints of the two largest publishers: 80-year-old universes of predominantly white, male and heterosexual heroes that are difficult to expand and transform in a short time. As such ComiXology can start with diverse offerings and has more flexibility in the choice of future titles. It also has the data necessary to fully leverage it. At present, ComiXology already knows which readers prefer drama graphic novels or series of issues, which prefer male or female stories, European, American or manga, etc. As such, it can invest in new titles that will cater to the variety of its customers and then advertise them directly to the relevant readers. Moreover, ComiXology can further boost its insight by relying on Amazon data, which includes data on print comic book sales, as well as other comics-based media. It can also tie its comic book services to other types of content beyond comic books, increasing the value of the ComiXology service by way of complementarity. ComiXology has many advantages over potential competitors and is beginning to leverage them.

Still, the piracy of comic books has also grown and is now easier than ever before. The switching costs related to piracy have become very low, and the comic book sharing websites gather huge monthly traffic. While this development may slow down the growth of digital formats, it might not be enough to actually curb it. Moreover, at the present it seems to cannibalise mostly the print issues, as the digital formats are too expensive to constitute a viable alternative for print readers. Finally, if

ComiXology succeeds in expanding its user subscription numbers it is likely that the convenience of the Guided View and direct app connection to the store will provide enough incentives to prevent the readers from switching to reading in browsers. Thus, while the piracy providers do not evoke high costs of switching – especially for the print readers – the digital readers might find increasing costs of switching due to benefit loss costs. This is supported by the fact that ComiXology users admitted to having used piracy sources almost three times less often than the participants of my reader survey.

Eventual saturation of popularity

DC and Marvel are unlikely to lose their position as the top two publishers any time soon, even if the new efforts by ComiXology succeed carving a large piece of the market. This is because the Big Two are connected to some of the most valuable properties in the world, including the Marvel Cinematic Universe or even single heroes like Batman or Spider-Man. The popularity of the cinematic world, in turn, ensures that the DC and Marvel superheroes will also appear in video games, TV shows, books and various merchandise. As such, DC and Marvel can safely rely on its vast back catalogue of characters, which it has, indeed, been doing increasingly over the recent years.

Still, while the current growth in comic books sales might be largely driven by the popularisation from movies, it is likely that this growth will eventually stop. This is because three trends that are currently driving the sales upward will eventually reach their natural finish. First, with the massive popularity of the comic book movies, there is a decreasing number of people who have not heard about the comic book heroes. While the box office growth has popularised many of the heroes and stories among new audiences, this growth will eventually reach saturation as the superhero movies become the new norm. Second, this same process means that the social stigma associated with comics will eventually stop its decrease. Third, as digitalisation, e-commerce, and comics-based media invited new audiences to read comic books, the potential for further growth across new kinds of readers will eventually decrease. These developments mean, that the processes that have so far helped the print comics avoid disruption, are gradually coming to an end.

Unsustainable strategies

Many commenters suggest that the current actions of the top publishers might lead to a new speculation boom and bust. First, the publishers are currently increasingly relying on their back catalogue of older characters. On the one hand, this is rational as these characters are their strongest assets. On the other hand, the rapid increase in the number of reboots and new series is followed by only a moderate increase in issue sales. This is increasingly risky, as the marginal profit from further reboots will eventually decrease as the general audience of casual readers stops growing.

Second, the publishers have also increased the numbers of variant covers provided to the market. This surprising move is reminiscent of the speculation bubble of the 80s/90s, especially in the times when the audience is visibly shifting towards newer and more casual readers – rather than print collectors. Already in 2013, Carlson (2013) estimated that as many as 43% of weekly shipped comics releases might be actually variants of other titles and not unique stories on their own. Many of these variants (all for DC and Marvel) do not come with a fixed price and instead allow to retailers to set their own prices for sale. On the other hand, they set specific quotas that allow the retailers to order, e.g. only one variant cover per fifteen regular ones.

Third, the publishers have been increasing the number of minority characters. However, this change has been, overall, occurring at a slow and non-consistent manner. For one, as previously shown, the

top publishers are increasingly depending on their legacy characters. This implies, that even though the number of minority characters has been increasing, the number of reboots of already existing characters has been growing much faster. Two, despite a growing number of female characters, female characters continue to constitute minority even in female-led comics and they are still often portrayed in an oversexualised manner (Cocca, 2014). Notably, both these issues have become smaller in the 2010s, but have not disappeared.

Still, the comic book market as a whole is unlikely to collapse as it did in the 1990s. This is because it is increasingly reliant on formats such as graphic novels and trade paperback – sold through channels other than comic book stores. It is also likely to grow in terms of formats such as the previously mentioned digital subscriptions. Finally, the comic book market is dominated by two publishers, with titles of each constituting a large universe of stories and characters. This unique situation gives them additional power, as comics-based media typically originate from these two universes. This provides two major advantages. First, the two publishers will retain their major brands and market power and can always rely on the comics-based media to spark at least a base level of interest in their stories. Second, DC and Marvel have large bargaining power when controlling how their comics are sold digitally – even by ComiXology. In the traditional book market, most stories can be published under numerous different labels – including Amazon. As such, Amazon can negotiate for each title and depending on the demands from the publisher and authors, it can threaten to remove certain book promotion channels or not to sell a specific book at all. There are also more publishers, which hampers organised negotiations with Amazon (e.g. to introduce agency pricing; Gilbert, 2015). Marvel and DC, on the other hand, can leverage their power and hold over the two most profitable universes to force higher prices and lagged availability in subscription. As such, ComiXology cannot fully rely on the DC and Marvel titles to drive its rise in the comic book market.

The comic book issues (and the comic book stores that sell them) are at risk as the speculator boom might reach its end, while a slow saturation in comics popularisation occurs simultaneously. In other terms, it is likely that the popularisation of comic book stories, a shift in the publishers' strategies, as well as the slow beginnings of digital distribution have delayed the disruptive effects of digitalisation. However, these effects may still arrive and reshape the comic book market with main losses for the traditional specialty stores and the single-issue format.

The Innovative Disruption

Many of the current trends in the American comic book industry fit in with the theory of innovative disruption framework of Bower and Christensen (1995). As discussed in Chapter I, disruptive innovations can appear in two ways: through a low-end foothold and through a new-market foothold. In the case of the comic books, both of these scenarios seem to be playing out.

The low-end foothold refers to a situation where the new entrant addresses a group of consumers with lower expectations regarding the product. At present, the top publishers seem to invest in raising of the collector value of their comic book issues. Moreover, the print copies are considered as superior by many of the comics readers. This does not, however, mean that all readers prefer print comic books. Instead, the digital comic books fit the description of an innovative product (Christensen et al., 2015) – considered inferior by the core audience, but also considered as 'good enough' by the low-end subgroup of the readers with no need of print copies.

The new-market foothold refers to a situation where a new audience becomes a target of the entrant provider. Indeed, new diverse audiences emerged as access to more diverse comic books became easier. As mentioned earlier, ComiXology has an advantage in catering to those needs. With both footholds and the recent plans of ComiXology, this confirms that the distributor sets themselves on the path for innovative disruption.

On the other hand, the current actions of the top publishers also reflect the recommendations of Christensen et al. (2015) on the basis of the theory of innovative disruption. First, the publishers pursue the sustaining innovation, which refers to the improvement of the product for the core target audience. In this regard, they increase the numbers of variant covers to further increase the value of the print copies of comic book issues. Second, the publishers invest in own products that are in line with the disruptive nature of the entrants. This entails catering to new audiences (by increasing diversity and reboots) and investing in own digital distribution (with subscription models and the recent DC Universe service launch).

However, as previously mentioned, the top two publishers are severely limited in how far they can invest in their current strategies. First, the increase in number of cover variants is not sustainable in a longer run. Second, the new entrants have much more freedom in investing in the diversity of their comic book titles. Third, any digital distribution channels launched by the incumbent publishers will be limited only to their own catalogues of titles, while the new entrants already established themselves as distributors of all publishers and genres. Finally, as noted by Steirer (2014), if ComiXology finds it lucrative, it can increase the collector value of its content by investing in technologies facilitating curation and collection sharing and display. Such developments would increase the attractiveness of digital channels relative to the print analogues.

Conclusions

The digitalisation has reshaped most of the creative industries, disrupting the previous business models. However, while the comic book industry faced the same processes introduced by digitalisation to other industries, it has managed to grow both in terms of its new capabilities and in terms of its traditional distribution patterns. This path of change is unique to the comic book market, despite the long struggles of other creative industries to do the same.

Just like other creative industries, the American comic book market saw the effects of digitalisation. Piracy of comic books evolved to become easier and convenient and replaced some of the paid readership of comic books. Digital formats, including direct sales and subscription have entered the market. The long tail of lesser known titles, independent publishers and creators has grown.

Yet at the same time, the traditional channels have also flourished, and the sales of print formats increased. While much of the growth was attributable to the sales of graphic novels in bookstores and chain stores, the numbers of comic book stores also increased. The top publishers retained their market shares and increased their revenues. In a unique fashion, the comic book market managed to reshape itself instead of getting disrupted.

I show that this pathway has been made possible by three strands of changes that took place at the same time. First, the comic book market went from a niche to a mass market through popularisation by comics-based media. This increased the sales across all channels and formats by, e.g. lowering the

social stigma associated with comic books and creating new audiences of casual readers. The growing access to more diverse titles allowed to better monetise the new audiences. At the same time, comic reintroductions of many of the major characters popularised by cinematic movies made it easier for new customers to pick up readership. Second, the digital formats have so far appeared largely unattractive to the comic book readers. This is partially because they lack collector value despite being sold at the same price as the print versions. As such, I find that the readers are not willing to pay much for the digital comic books and are therefore more likely to choose between print versions and piracy. Third, the publishers have changed their strategies and begun investing in cover variants – i.e. raising collector value of the comic book issues – as well as in reboots and new series on their most popular and classic heroes. This allowed for the growth of the print issues and stores.

Despite the current success, it is likely that the comic book industry delayed the digital disruption rather than avoided it. So far, the market has been increasing by way of rapid popularization. However, this growth trend will eventually stop, when comic book popularity reaches its saturation. Moreover, the current publisher strategies regarding the comic book issues are likely unsustainable. The number of new series has been increasing rapidly, but the sales growth has been slowing down. The introduction of large numbers of variant covers might eventually lead to a second speculation bust in the comic book market – especially as the audience is increasingly shifting toward new and more casual readers and chain stores. Finally, the digital intermediaries are only gaining speed, releasing more features and exclusive content. They also have the advantage of access to highest-grade algorithms and big data on customer preferences. With the new audiences leaning relatively more towards digital formats, it is likely that the market will eventually shift more to the bundled digital consumption. In summary, the current channel of comic book stores and the format of print issues are both at risk of disruption. On the other hand, the graphic novels and collections, as well as digital formats seem to flourish as they benefit most from the popularisation by comics-based media and are not reliant on the value of series reboots or cover variants.

The findings of this thesis provide a first thorough discussion of the American comic book industry and its evolution since the beginning of the XXI century. This outcome is achieved through aggregation of pre-existing statistics from various sources, collection of new large datasets on the basis of the information available on the internet, and collection of entirely new data through a series of three surveys among comic book readers. The current state and recent developments in the American comic book market are presented and econometric analysis provides an in-depth look at the consumption choices across the print, digital and pirate channels. The conducted analyses allow to pinpoint the drivers of the recent developments in the comic book market. At the same time, the framework of digitalisation processes, the theory of disruptive innovation and the comparison with other creative industries allowed to present the likely future of the comic book industry.

Furthermore, the unique case of the comic book industry provides insight for other creative industries as well. As comic books have begun as a relatively niche market, the changes in this market can be likely compared to the changes for relatively less popular content in other creative industries. Indeed, it has been often shown that the small, independent creators are the main benefactors of digitalisation. The case of comic books shows that this might be partially because of the increased diversity of content stemming from access to the lesser known and popular titles. Thus, digitalisation allows to cater to new types of audiences, which in turn creates a new market for the long tail titles. Moreover, the current strategies of the comic book publishers highlight the importance of creating

easy entrance to cultural content (e.g. “jump-on” points) so as to make participation easier for the new consumers. This insight can be translated into any long-running TV series or cinematic universe. Finally, the study of piracy and digital consumption shows that in some cases the digital formats might be considered as inferior relative to the traditional goods. In such cases, a bundling strategy or low prices are needed to incentivise the customers to purchase instead of turning to piracy.

The complexity of the comic book market and its difference to other industries shows that further research is still needed. For one, the effects of piracy on long formats (such as graphic novels), lesser known titles, indie publishers and digital subscription remain unknown. Moreover, there is less data and knowledge on how numerous other small industries went through digitalisation. The case of the comic book market shows that these industries might provide valuable insight on the potential effects of digitalisation and how to avoid the negative part of its effects (or at least delay it).

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Appendix A

Table A1. Ordered logit regressions of perceived risks associated with P2P content in a sample of heavy P2P users

Risk of:	(1) Viruses	(2) Wrong descriptions	(3) Difficult finding	(4) Poor quality	(5) Malware	(6) Viruses	(7) Wrong descriptions	(8) Difficult finding	(9) Poor quality	(10) Malware
Music files downloaded	<i>(base level: None)</i>									
Less than 10 albums	-0.14	-0.30	-0.21	0.13	0.10					
Over 10 albums	-0.09	-0.17	-0.25	-0.06	0.14			-		
Over 100 albums	-0.06	-0.37	-0.55	-0.32	-0.01					
Over 1,000 albums	-0.42	-0.61	-0.86**	-0.57	-0.34					
Movies/TV episodes downloaded	<i>(base level: None)</i>									
Less than 10 movies or TV episodes	-0.21	-0.04	0.57	0.43	-0.31					
Over 10 movies or episodes of TV series	-0.55*	-0.04	0.49	0.22	-0.48			-		
Over 100 movies or episodes of TV series	-0.82**	-0.03	0.46	0.20	-0.52					
Over 200 movies or episodes of TV series	-1.06***	-0.50*	0.03	-0.24	-0.95***					
Minimum level of downloads						<i>(base level: No music files and no TV episode files)</i>				
At least “less than 10 albums” and at least “less than 10 movies or TV episodes”			-			-0.43	-0.34	0.28	0.04	-0.33
At least “over 10 albums” and at least “over 10 movies or episodes of TV series”			-			-0.49*	-0.20	0.20	-0.10	-0.33
At least “over 100 albums” and at least “over 100 movies or episodes of TV series”			-			-0.75***	-0.53**	-0.17	-0.46*	-0.69***
Over 1,000 albums and over 200 movies or episodes of TV series			-			-1.13***	-0.92***	-0.69**	-0.91***	-1.07***
Observations	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251	2,251

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The explained variable takes the values from 1 – Disagree to 5 – Agree. The five dimensions included in the columns reflect statements about risks associated with P2P content: “The files downloaded from P2P file-sharing sites often contain viruses” (Viruses), “The files downloaded from P2P file-sharing sites often contain something else than the file description indicates” (Wrong descriptions), “It is difficult or more difficult to find files from P2P file-sharing sites than from legal stores” (Difficult finding), “The files downloaded from P2P file-sharing sites have often poor quality” (Poor quality), “The files downloaded from P2P file-sharing sites often contain malware” (Malware). The regressions are on a sample of frequent P2P users (i.e. those who indicated using P2P at least several times a week). The explaining variable of interest in columns (6)-(10) takes the minimum of the from the music and movie/TV episode files downloads numbers. All regressions include control variables for: gender, year of birth, education level dummies and income categories.

Source: own calculations based on the HIIT data (Hietanen et al., 2007).

Appendix B

The comics surveys can be viewed here (parts of the script might not work due to expiration of the premium licence at the survey service):

Survey 1 (February) – <http://profitest.pl/s/17402/NXHWdbX0>

Survey 2 (March) – <http://profitest.pl/s/17403/3ZScGqDp>

Survey 3 (April) – <http://profitest.pl/s/17404/bkWxQNEc>

List of Facebook groups where invitations for the first survey were placed:

Fans of DC Comics; DC & Marvel Legends; Marvel & DC Fans Unite; DC & Marvel: The Ultimate Facebook Community; Marvel Universe Rocks My World.

List of subreddits where invitations for the first survey were placed:

All Things Green Arrow (*GreenArrow*); Ant-Man (*antman*); Art from the Marvel universe (*ImaginaryMarvel*); Bane (*Bane*); Aquaman (*Aquaman*); Batgirl (*batgirl*); Batman Comics (*batman_comics*); Better than Superman! (*Supergirl*); Black Panther (*theblackpanther*); Blackwidow (*Blackwidow*); By the Hoary Hosts! (*DoctorStrange*); Captain Marvel (*Captain_Marvel*); Carnage. A more sinister symbiote (*OfficialCarnage*); The Carol Corps: Fan of Carol Denvers (*carolcorps*); The Catwoman Subreddit (*Catwoman*); comicbooks (*comicbooks*); Comic Book Suggestions (*comicbooksuggest*); ComicPorn (*ComicPorn*); comic reviews (*ComicReviews*); comixology (*Comixology*); Content about comics (*TrueComicBooks*); Cyclops (Scott Summers) (*Cyclopswasright*); Daredevil: The Man Without Fear (*Daredevil*); Deathstroke (*Deathstroke*); Earth's Mightiest Heroes (*Avengers*); Fantastic Four (*FantasticFour*); Fights between superheroes and villains (*superfight*); The First Avenger (*CaptainAmerica*); For all Harley Quinn lovers! (*HarleyQuinn*); For All Things Suicide Squad (*SuicideSquad*); Gosh, I love Hawkeye. (*HAWKEYE*); Green Lantern – Beware my power, Green Lantern's Light! (*Greenlantern*); Guardians of the Galaxy (*GotG*); Image Comics (*ImageComics*); The Immortal Iron Fist (*ironfist*); The Incredible Subreddit (*hulk*); The Inhumans Subreddit (*Inhumans*); The Invincible Iron Man (*invincibleironman*); The Iron Avenger (*ironman*); Jason Todd: AKA Red Hood (*RedHood*); Luke Cage (*lukecage*); Marvel Comics (*Marvel*); marvel comics wallpaper (*marvelcomics*); Marvel's Runaways: Try not to die (*Runaways*); The Marvelous Kamala Khan (*KamalaKhan*); Mr. Wade Winston Wilson (*deadpool*); Nerd Comics (*nerdcomics*); Nightwing – Crimefighting with a smile since 1984 (*Nightwing*); The Norse God of Thunder (*Thor*); Power Girl (*PowerGirl*); The Punisher (*thepunisher*); Share your favorite covers. (*ComicBookCovers*); Spider-man (*Spiderman*); Spider-Gwen (*SpiderGwen*); Spirit of Vengeance (*GhostRider*); Star Wars Comics (*starwarscomics*); Superheroes and Comic Books (*superheroes*); Thanos (*Thanos*); The Venom Site (*thevenomsite*); The Walking Dead Comics (*thewalkingdeadcomic*); Wolverine (*Wolverine*); Women of Marvel Comics (*womenofmarvel*); Wonder Woman: Champion (*WonderWoman*); World's Greatest Heroes! (*justiceleague*); X-Men (*xmen*); /r/DCcomics: A friendly community dedicated to the Greatest Superheroes in the World (*DCcomics*).

Table B1. Characteristics of the 150 comics and acquisitions in the sample.

Full title	Acquisition				Sales	Price (\$)	Released
	Print	Digital	Borrowed or subscription	Unpaid			
DC comics							
Action Comics (2016) #995	27	8	6	16	41987	2.99	01.10.2018
Action Comics (2016) #996	30	8	6	17	41331	2.99	01.24.2018
Action Comics (2016) #997	21	7	4	7	43509	2.99	02.14.2018
Action Comics (2016) #998 ^A	20	7	4	5	43810	2.99	02.28.2018
Action Comics (2016) #999	21	7	2	7	51534	2.99	03.14.2018
Batman (2016) #38	88	24	9	29	98440	2.99	01.03.2018
Batman (2016) #39	88	24	8	27	94325	2.99	01.17.2018
Batman (2016) #40	38	18	4	8	95541	2.99	02.07.2018
Batman (2016) #41	42	16	5	9	93889	2.99	02.21.2018
Batman (2016) #42	43	12	4	8	93825	2.99	03.07.2018
Batman (2016) #43	42	12	4	9	91649	2.99	03.21.2018
Batman and the Signal (2017) #1	36	10	7	11	62394	3.99	01.03.2018
Batman and the Signal (2017) #2 ^B	20	4	3	4	37758	3.99	02.21.2018
Batman White Knight (2017) #4	46	12	8	17	73043	3.99	01.03.2018
Batman White Knight (2017) #5 ^B	32	9	5	6	77373	3.99	02.07.2018
Batman White Knight (2017) #6	25	7	6	8	75396	3.99	03.07.2018
Brave & The Bold Batman & Wonder Woman (2018) #1 ^A	16	3	2	2	42087	3.99	02.21.2018
Brave & The Bold Batman & Wonder Woman (2018) #2	12	1	1	4	31831	3.99	03.21.2018
Damage (2017) #1	17	4	4	12	37001	2.99	01.17.2018
Dark Knights Rising The Wild Hunt (2017) #1	33	9	2	6	101373	4.99	02.14.2018
Dark Nights Metal (2017) #5	76	17	9	24	149076	3.99	01.31.2018
Dark Nights Metal (2017) #6	41	10	3	9	187583	4.99	03.28.2018
Detective Comics (2016) #972	43	14	7	18	51694	2.99	01.10.2018
Detective Comics (2016) #973	45	13	6	18	53024	2.99	01.24.2018
Detective Comics (2016) #974	27	7	6	8	51189	2.99	02.14.2018
Detective Comics (2016) #975	27	8	6	8	51856	3.99	02.28.2018
Detective Comics (2016) #976	24	7	2	8	51341	2.99	03.14.2018
Detective Comics (2016) #977	24	6	2	8	50556	2.99	03.28.2018
Detective Comics Annual (2016) #1	40	12	6	12	44882	4.99	01.31.2018
Doomsday Clock (2017) #3	86	15	9	27	157714	4.99	01.24.2018
Doomsday Clock (2017) #4	40	14	2	9	149581	4.99	03.28.2018
Flash (2016) #38	42	17	6	16	48279	2.99	01.10.2018
Flash (2016) #39	40	18	7	18	49595	2.99	01.24.2018
Flash (2016) #40	17	14	5	10	46149	2.99	02.14.2018
Flash (2016) #41	20	12	5	7	46040	2.99	02.28.2018
Flash (2016) #42	18	10	3	8	46170	2.99	03.14.2018
Flash (2016) #43	18	10	3	7	45616	2.99	03.28.2018
Flash Annual (2016) #1	34	16	6	16	44946	4.99	01.31.2018
Justice League (2016) #36	39	14	3	12	46043	2.99	01.03.2018
Justice League (2016) #37	39	14	3	12	45313	2.99	01.17.2018
Justice League (2016) #38	20	7	6	6	45314	2.99	02.07.2018
Justice League (2016) #39 ^A	18	6	6	5	44148	2.99	02.21.2018
Justice League (2016) #40	16	7	2	6	44562	2.99	03.07.2018
Justice League (2016) #41	13	7	2	7	43675	2.99	03.21.2018
Mister Miracle (2017) #6	45	12	2	15	38655	3.99	01.10.2018
Mister Miracle (2017) #7	26	6	1	8	40337	3.99	03.14.2018
Super Sons (2017) #12	25	10	3	17	35068	3.99	01.17.2018
Super Sons (2017) #13	16	8	3	4	29625	3.99	02.21.2018
Super Sons (2017) #14	14	5	2	6	28999	3.99	03.21.2018
Superman (2016) #38	38	10	5	15	47261	2.99	01.03.2018
Superman (2016) #39	36	9	5	15	44402	2.99	01.17.2018
Superman (2016) #40	20	8	5	5	43776	2.99	02.07.2018
Superman (2016) #41	19	7	5	4	42694	2.99	02.21.2018
Superman (2016) #42	17	5	3	5	43799	2.99	03.07.2018
Superman (2016) #43	17	5	3	5	42291	2.99	03.21.2018

Table B1. Characteristics of the 150 comics and acquisitions in the sample. (continued)

Full title	Acquisition				Sales	Price (\$)	Released
	Print	Digital	Borrowed or subscription	Unpaid			
Terrifics (2018) #1 ^A	25	6	2	3	45493	2.99	02.28.2018
Terrifics (2018) #2	21	7	1	6	34525	2.99	03.28.2018
Wonder Woman (2016) #38	22	10	3	8	36828	2.99	01.10.2018
Wonder Woman (2016) #39	24	9	3	7	36269	2.99	01.24.2018
Wonder Woman (2016) #40	10	5	5	2	36464	2.99	02.14.2018
Wonder Woman (2016) #41	10	5	4	2	35572	2.99	02.28.2018
Wonder Woman (2016) #42	8	5	2	2	35358	2.99	03.14.2018
Wonder Woman (2016) #43	8	4	2	2	35043	2.99	03.28.2018
Image comics							
Hit-Girl (2018) #1	7	3	2	0	39709	3.99	02.21.2018
Hit-Girl (2018) #2	4	2	1	3	21185	3.99	03.28.2018
Kick-Ass (2018) #1 ^B	8	2	2	4	50030	3.99	02.14.2018
Kick-Ass (2018) #2	4	4	2	5	25156	3.99	03.21.2018
Oblivion Song By Kirkman & De Felici (2018) #1	16	5	0	3	80287	3.99	03.07.2018
Saga (2018) #49 ^A	18	11	2	4	38734	2.99	02.28.2018
Saga (2018) #50	20	11	2	6	45546	2.99	03.28.2018
Walking Dead #175	23	3	7	10	82361	3.99	01.03.2018
Walking Dead #176 ^B	8	3	2	4	77407	3.99	02.07.2018
Walking Dead #177	11	4	0	3	74828	3.99	03.07.2018
Marvel comics							
Amazing Spider-Man (2015) #794	43	12	14	20	51412	3.99	01.24.2018
Amazing Spider-Man (2015) #795	18	10	6	5	52844	3.99	02.07.2018
Amazing Spider-Man (2015) #796 ^B	18	10	5	5	55138	3.99	02.21.2018
Amazing Spider-Man (2015) #797	20	9	2	7	128189	3.99	03.07.2018
Amazing Spider-Man Annual (2018) #42	11	9	3	7	43935	4.99	02.14.2018
Amazing Spider-Man Venom Inc Omega (2018) #1	34	9	6	11	63322	4.99	01.17.2018
Astonishing X-Men (2017) #7	25	8	5	15	50772	3.99	01.03.2018
Astonishing X-Men (2017) #8 ^A	8	8	2	2	31786	3.99	02.21.2018
Astonishing X-Men (2017) #9	12	8	2	6	31577	3.99	03.14.2018
Avengers (2016) #675	31	9	10	22	79946	4.99	01.10.2018
Avengers (2016) #676	29	9	10	24	39094	3.99	01.17.2018
Avengers (2016) #677	27	8	10	23	38481	3.99	01.24.2018
Avengers (2016) #678	27	8	8	23	37403	3.99	01.31.2018
Avengers (2016) #679	11	6	4	6	39046	3.99	02.07.2018
Avengers (2016) #680	10	6	5	6	38437	3.99	02.14.2018
Avengers (2016) #681	10	5	6	6	39345	3.99	02.21.2018
Avengers (2016) #682	10	5	6	6	39486	3.99	02.28.2018
Avengers (2016) #683	7	5	1	8	44651	3.99	03.07.2018
Avengers (2016) #684	7	5	1	8	54061	4.99	03.14.2018
Avengers (2016) #685	7	4	2	8	46037	3.99	03.21.2018
Avengers (2016) #686	7	4	2	8	44596	3.99	03.28.2018
Captain America (2017) #697	38	14	7	21	37030	3.99	01.03.2018
Captain America (2017) #698	14	7	6	7	36297	3.99	02.14.2018
Captain America (2017) #699	11	4	1	7	35112	3.99	03.07.2018
Doctor Strange Damnation (2018) #1	11	6	2	4	41564	4.99	02.21.2018
Doctor Strange Damnation (2018) #2	9	6	1	7	32900	3.99	03.07.2018
Guardians of the Galaxy (2017) #150	24	8	3	12	42521	4.99	01.03.2018
Infinity Countdown (2018) #1	15	6	1	6	93029	4.99	03.07.2018
Infinity Countdown Prime (2018) #1	14	6	3	4	55260	4.99	02.21.2018
Mighty Thor (2015) #703	28	9	9	13	42116	3.99	01.17.2018
Mighty Thor (2015) #704 ^B	8	8	2	6	41533	3.99	02.21.2018
Mighty Thor (2015) #705	11	10	3	5	93082	3.99	03.21.2018
Old Man Hawkeye (2018) #1	24	8	7	17	57454	3.99	01.10.2018
Old Man Hawkeye (2018) #2 ^A	13	8	1	3	33365	3.99	02.14.2018
Old Man Hawkeye (2018) #3	7	5	2	7	31339	3.99	03.28.2018
Old Man Logan (2016) #33	31	10	11	18	35468	3.99	01.10.2018

Table B1. Characteristics of the 150 comics and acquisitions in the sample. (continued)

Full title	Acquisition				Sales	Price (\$)	Released
	Print	Digital	Borrowed or subscription	Unpaid			
Peter Parker Spectacular Spider-Man (2017) #300 ^A	18	6	3	7	77094	5.99	02.28.2018
Peter Parker Spectacular Spider-Man (2017) #301	15	6	0	10	31014	3.99	03.14.2018
Peter Parker Spectacular Spider-Man (2017) #302	15	6	0	10	28155	3.99	03.28.2018
Phoenix Resurrection Return Jean Grey (2017) #2	26	13	8	22	51318	3.99	01.03.2018
Phoenix Resurrection Return Jean Grey (2017) #3	23	13	8	21	49261	3.99	01.10.2018
Phoenix Resurrection Return Jean Grey (2017) #4	22	12	7	22	46517	3.99	01.24.2018
Phoenix Resurrection Return Jean Grey (2017) #5	24	12	7	21	46689	4.99	01.31.2018
Rise of Black Panther (2018) #1	20	14	7	9	40897	3.99	01.03.2018
Rogue & Gambit (2018) #1	23	7	9	19	38657	3.99	01.03.2018
Rogue & Gambit (2018) #2 ^B	9	4	2	2	22201	3.99	02.07.2018
Rogue & Gambit (2018) #3	11	5	2	3	18514	3.99	03.07.2018
Star Wars (2015) #41	28	3	7	11	56545	3.99	01.03.2018
Star Wars (2015) #42	26	3	6	11	53710	3.99	01.17.2018
Star Wars (2015) #43 ^B	17	6	4	3	56045	3.99	02.07.2018
Star Wars (2015) #44	17	7	2	8	55650	3.99	03.07.2018
Star Wars (2015) #45	17	7	2	7	52408	3.99	03.21.2018
Star Wars Darth Vader (2017) #10	27	7	11	14	53420	3.99	01.10.2018
Star Wars Darth Vader (2017) #11	15	5	4	7	53275	3.99	02.14.2018
Star Wars Darth Vader (2017) #12 ^A	14	5	3	7	49134	3.99	02.28.2018
Star Wars Darth Vader (2017) #13	15	4	2	10	52372	3.99	03.14.2018
Star Wars Last Jedi DJ (2018) #1	13	3	4	8	42427	4.99	01.31.2018
Star Wars Thrawn (2018) #1 ^B	12	5	1	4	52295	4.99	02.14.2018
Star Wars Thrawn (2018) #2	10	4	1	11	37304	3.99	03.14.2018
Venom (2016) #160	25	13	7	10	37487	3.99	01.10.2018
Venom (2016) #161	8	3	3	3	31864	3.99	02.07.2018
Venom (2016) #162	9	4	2	2	34211	3.99	02.21.2018
Venom (2016) #163	8	4	2	5	28593	3.99	03.07.2018
Weapon H (2018) #1	4	4	0	5	98651	4.99	03.21.2018
X-Men Blue (2017) #21	15	9	2	4	39030	3.99	02.14.2018
X-Men Blue (2017) #22	15	9	2	3	35062	3.99	02.28.2018
X-Men Blue (2017) #23	12	6	2	7	36166	3.99	03.14.2018
X-Men Blue (2017) #24	12	6	2	7	32045	3.99	03.28.2018
X-Men Blue Annual (2017) #1	29	11	9	17	38522	4.99	01.24.2018
X-Men Gold (2017) #19	30	10	7	12	36915	3.99	01.03.2018
X-Men Gold (2017) #20	28	10	7	13	36471	3.99	01.17.2018
X-Men Gold (2017) #21	12	9	3	2	39379	3.99	02.07.2018
X-Men Gold (2017) #22 ^B	12	9	3	2	35420	3.99	02.21.2018
X-Men Gold (2017) #23	11	6	2	7	38531	3.99	03.07.2018
X-Men Gold (2017) #24	11	6	2	7	35008	3.99	03.21.2018
X-Men Red (2018) #1 ^A	23	9	1	5	98468	4.99	02.07.2018
X-Men Red (2018) #2	22	6	3	7	49084	3.99	03.07.2018
Summary	Totals				Averages		-
DC comics	1905	613	268	622	58014	3.40	-
Image comics	119	48	20	42	53524	3.79	-
Marvel comics	1333	563	328	728	46798	4.20	-
All comics	3357	1224	616	1392	51957	3.84	-
All comics (%)	51%	19%	9%	21%	-	-	-

Note: ^A First half of the twenty titles evaluated in the 2nd survey (see section IV.3.3). ^B Second half of the twenty titles evaluated in the 2nd survey (see section IV.3.3).

Source: Own elaboration based on survey data and Comichron data.

Appendix C

One recent study suggests no long-term effects of the comics-based movies on single-issue comics sales. Hionis and Ki (2018) look at the sales of comic book series of the same title as premiering cinema movies. They conclude that a release of a comics-based movie contributes to only a short-term ‘bump’ in related comics sales, but no long-lasting effect. To show this, they use the data of Comichron (also used in parts of this thesis) and run a regression of single-issue sales before and after a movie release, with the movie release acting as an explaining variable. Notably, the study of Hionis and Ki (2018) describes several aspects of the comic book industry, with the popularisation from comics-based movies being only one of them. Unfortunately, I find several issues with the results of their analysis and their interpretation of the findings.

C.1. Limited study description

The results of Hionis and Ki (2018) are difficult to interpret as their exact methodology is not clearly described. In the text, the authors describe the approach in the following words:

“To study such an effect, we traced the sales figures 6 months prior and 6 months after for all movies related to both the Marvel and DC cinematic universes. (...) Table 8 presents the sales for the associated for each release, which are shown graphically in Figs. 9 and 10. Films for both the MCU and the DCU tend to increase the film’s respective title’s sales, but this growth is only temporary. (...) Table 9 shows the results of a simple time series regression measuring the effect either [DC or Marvel] publisher’s movie release, including a three-month lag, has on comic book sales.”

However, the name of their Table 9 is *“Simple regression of movie film on sales”* and the table notes state:

“Result of the simple regression result of the impact of movie film on sales. Dependent variable is % change in movie sales. Data span from January 2005 to December 2017 with the monthly frequency.”

Thus, the following issues remain unclear:

- The dependent variable is unclear. Likely, the authors meant a “% change in comics sales”. Still, this leaves questions on what the observations actually represent: monthly single-issue sales, monthly comics series sales (with more than one issue in a month), monthly publisher sales or monthly sales from both publishers.
- The authors provide the date range of their data but do not provide the number of observations, which prohibits inferring the unit of observation.
- The authors also do not specify what is considered an “associated” or “respective” comic book title. The comic book series “Captain America” is most likely associated with the “Captain America” movie, but it is unclear whether it is also associated with the “Avengers” movie (the superhero team “Avengers” includes Captain America) or if the comic book series “Avengers” is treated as associated with the “Captain America” movie.
- Based on the title list from the authors’ Table 8, their sample does not include any of the Marvel comics-based movies that do not constitute the Marvel Cinematic Universe (e.g. most Spider-man movies, Fantastic Four, numerous X-Men films). On the other hand, the Table 8 includes some films that do not constitute the DC Universe - contradicting the earlier description (such as the Dark Knight trilogy by Christopher Nolan). Thus, the sample choice seems inconsistent. With the title choices not explained by the authors.

C.2. Limited analysis

The authors offer a very simple framework that does not account for numerous likely important factors. In their regression model, Hionis and Ki (2018) regress the % change in sales on the release of a comic-based movie. They also look at the effects of lagged variables to look at possible sales increase prior to a movie release. However, this does not control for several factors:

- The authors treat all of the movie releases in the same way – regardless of their reviews and box office results. It is likely, that more successful movies would have higher impact, while those with lower ratings failed to increase the comic book sales. This could be easily accounted for by controlling for both reviewers' ratings of the movies and box office results.
- The authors also do not discern between direct movie sequels and first movies about the heroes. They also do not control for the year of movie release. For example, the movie *Thor* might have had a different impact than *Thor 3* as the latter was less likely to capture audiences still unfamiliar with that superhero. Similarly, the audience of the first Marvel Cinematic Universe movie from 2008 was, *ceteris paribus*, more likely to not know much about the comic books than the audience of the recent releases (i.e. after 10 years of MCU movies).
- The authors look only at comics series directly associated with the movies. However, they do not control for simultaneous changes in sales for titles that are not related to the movies. Including other comics series as reference could help capture the long-term movie effects on sales.
- The authors do not control for any of the comics series characteristics. For example, these could include the issue number or the publisher. The issue number, in particular, would discern between new and ongoing series. This is especially important as new series might be more likely to be picked up by new audiences who saw a movie (a new reader would be less likely to pick up, e.g. Spider-Man #789 than Spider-Man #1 if they have not read any of the previous issues).
- There are likely numerous other comics-series related factors that could be accounted for by using a Fixed Effects panel design.

C.3. Problems with the interpretation

Finally, the authors claim that their results provide evidence of no long-term effects of the popularisation on comics sales (and only a temporary bump). While the authors' attempt sheds some light on the relationship between movies and comics sales, there are numerous other ways in which the comics-based movies could have affected comic book sales. Among others:

- The authors do not consider potential spillover effects. I.e. a new reader might start by picking up a movie-related comics series but then shift to other titles as a result.
- The effects might more indirect – e.g. by way of reducing social stigma and making the comic books more recognisable in general. These effects would increase the sales of all comic book titles and would comprise a combined effect of the whole comic-book movie genre.
- Even if the effect materialised only through short-term bumps, this implies a close to continuous increase. The number of yearly comic book movies has been gradually increasing, with 7 DC and Marvel movies in 2018 alone. This means that through most months of a year, the comics sales can benefit from the direct effects of the comics-based movies.
- The authors' analysis does not account for the shift in publishers' strategies who schedule their releases around cinema movie titles. As such, they cannot account for the counter-factual scenario of no movie release. While the authors measure the effects on, e.g. all Captain America comics titles, they do not account for the fact that some of these series would not be running at

that time if not for the movie. This also highlights why controlling for other comic book series should be considered for the analysis.

C.4. Conclusions

The paper of Hionis and Ki (2018) offers some results on the effects of comics-based movies. However, I find that the methodology applied by the authors is confusing and some of their choices remain unclear. Moreover, their analysis seems to omit several easily controllable factors. Even if these limitations did not change the results, the authors provide an overreaching interpretation of their results. While their results might provide a significant piece of a larger puzzle, they do not warrant definite conclusions on the matter.