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Publication date

2022

Document Version

Final published version

[Link to publication](#)

Citation for published version (APA):

Poort, J. (2022). 21 for 2021: Imagine no possessions: from piracy to streaming. Web publication or website, CREATE. <https://www.create.ac.uk/blog/2022/04/14/21-for-2021-imagine-no-possessions-from-piracy-to-streaming/>

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Blog

21 for 2021: Imagine no possessions: from piracy to streaming

Posted on Thursday April 14, 2022 by Admin

*This post is part of a series of evidence summaries for the **21 for 2021 project**, a CREATE project within the AHRC Creative Industries Policy and Evidence Centre (PEC). The 21 for 2021 project offers a synthesis of empirical evidence catalogued on the **Copyright Evidence Portal**, answering 21 topical copyright questions for the 21st century. In this post, **Joost Poort** (Associate Professor and co-director at the Institute for Information Law (IViR), University of Amsterdam and CREATE Fellow) explores the empirical evidence on the transition from rampant online piracy to the ubiquitous legal use of streaming services.*



Introduction

When Napster was launched in 1999, the music industry was quick to point the finger. In 2000, for instance, the IFPI wrote: “*Online piracy poses exactly the same threat as its physical equivalent to the creativity of artists and the investment of record producers. Potentially its impact is far greater than physical piracy.*” (IFPI, 2000). The unauthorised online exchange of copyright protected material – as online piracy may more neutrally be described – was claimed to cause the industry tremendous harm. Each music file acquired without rightholders’ consent was equated to a sale forgone, which did not just deprive musicians and record publishers of their income, but also jeopardized future investments in quality music recordings.

After its shutdown in 2001, Napster was succeeded by technically more refined platforms and sharing protocols such as Morpheus, Gnutella, LimeWire, eMule, and BitTorrent. Such platforms and protocols generally do not store copyright protected content on a central server but facilitate its direct peer-to-peer (‘p2p’) exchange between users (peers) to avoid liability and vulnerability. A different technology, known as cloud storage, makes use of cloud storage hosted at locations which aim to be out of reach of copyright enforcement. Illegal supply also expanded to

streaming (e.g. Popcorn Time), enabling users to enjoy content without downloading it. And in some cases, unauthorised streaming is done via dedicated technical devices with pre-installed links to unauthorised content platforms.

It all started off with music, but as soon as growing Internet bandwidth allowed, films, series and games followed suit. In a 2005 study for the Motion Picture Association, LEK Consulting wrote “*Piracy is the biggest threat to the U.S. motion picture industry.*” It claimed that in 2005 the major US studios lost \$6.1 billion to piracy, 38% of which took place online (LEK, 2005). This alarmist tone resounds the music industry’s earlier responses to the boom of private copying in the 1980s – ‘home taping is killing music’ – (e.g. see [Bottomley, 2015](#)), as well as the fear in the early 1950s that radio airplay would hurt record sales ([Leblebici et al., 1991](#)).

The legal status of the aforementioned platforms and technologies was often subject to debate, and the outcome of that debate would vary from one country to the next and could change over time ([Quintais and Poort, 2019](#)). What they all have in common, however, is that they triggered regulatory interventions and challenged the content industries’ ways of doing things and forced their hand towards developing new business models.

Debates and recent evolutions

Three major debates were triggered by online piracy on all its forms: (1) How does it affect legal sales? (2) What regulatory measures can be taken to stop it? (3) How should the industry itself respond?

These debates are interlinked. The first question is primarily an empirical albeit highly intricate one that will be discussed in more detail in the next section. The answer to this question is, however, very relevant for the other two. If online piracy is indeed a severe threat to the content industries, it may warrant severe measures, provided that these measures work. Empirical evidence on the latter will be outlined in the subsequent section. If they do not work or if the threat is less severe than is initially thought, the industries may have to find out what lessons can be learned from piracy and respond accordingly.

The effect of online piracy on sales

The empirical question of the effect of online piracy on legal sales has proven to be cumbersome. Over the past years, a substantial body of academic literature emerged on the topic, but to no general consensus. Most of the earlier contributions focus on the music industry – e.g., [Peitz and Waelbroeck \(2004\)](#), [Rob and Waldfogel \(2006\)](#), [Zentner \(2006\)](#), [Liebowitz \(2006\)](#) and [Oberholzer-Gee and Strumpf \(2007\)](#). A smaller number of studies deal with the effect for movies – e.g., [Bounie, Bourreau and Waelbroeck \(2006\)](#), [Hennig-Thurau, Henning and Sattler \(2007\)](#) and [Rob and Waldfogel \(2007\)](#).

In literature reviews (e.g., [Handke 2012](#); [Smith and Telang 2012](#); and [Watson, Zizzo and Fleming 2014](#)), it is

observed that there are hardly any studies concerning other markets such as games, books and software. **Smith and Telang, 2012** conclude that “*the vast majority of the literature ... finds evidence that piracy harms media sales*”. However, some studies find a positive effect and most of this evidence suggests a much smaller effect than a one-to-one displacement of sales by illegal copies and quantitative estimates vary substantially. For example, a more recent study by **Poort et al. (2018)** find relatively high displacement rates for books and games, but lower values for music and audio-visual content using instrumental variable regressions (see below), and positive correlations between piracy and legal consumption in a panel analysis, following a set of respondents over time. These seemingly contradictory outcomes are reconciled by the notion that substitution effects occur on the spot, while over a longer time span, changes in personal preferences affect legal and illegal consumption alike.

How can it be that this relation between online piracy and sales, which seems obvious at first glance, is so elusive and hard to establish in practice? Firstly, because closer scrutiny paints a more diverse picture. Piracy can affect legal consumption in different ways, some of which are negative, some positive and some neutral. The most prominent positive effect is known as the *sampling effect*: through piracy, consumers are introduced to new music, actors and genres and this creates new demand. In addition, online piracy may increase the popularity of content (the *network effect*) or enhance the demand for *complementary products* such as live concerts and merchandise.

On the downside, the most prominent effect is *substitution*: a consumer refrains from buying specific content legally after having pirated it. More subtle negative effects on sales occur when sampling leads to fewer bad buys or deferred purchases at lower prices. Lastly, piracy may displace legal consumption via competition for people’s time budget: if one watches a movie illegally, one cannot watch a movie legally at the same time.

Neutral effects with respect to sales occur when file sharing meets the demand of consumers with insufficient willingness to pay – a likely effect in low-income groups and countries – consumers who have demand for a work that is not on offer or is offered on a platform they do not know, or for a work in a specific technical quality or file type that is not legally available. Against this background, it is less surprising that the findings of empirical studies vary widely, ranging from positive to neutral to negative.

Moreover, the strength of the different interactions is likely to differ *between* content types. For instance, most people enjoy the same music many times, while they watch a film or read a book only once or twice. This implies that sampling – try before you buy – will be more relevant for music than for audio-visual content and books. Also, the positive effect of piracy on the demand for related products such as live concerts and merchandize may be significant for music, while the time budget effect is less relevant, as music is often enjoyed while doing other things at the same time. All this suggests that net sales displacement is like to be higher for films, series and books than for music.

Effects may also vary *within* content types: the sampling effect is likely to be weaker for famous artists and blockbuster movies from which consumers generally know what to expect. Moreover, popular and recent content is more likely to be on offer legally, while older and niche content may be unavailable, hard to find, or out of commerce. Indeed, some studies find indications that more popular musicians and albums

(Blackburn 2004, Mortimer et al. 2012) and blockbuster movies (Peukert, Claussen and Kretschmer 2015) suffer more from the substitution effect, while less well-known productions may even benefit as the opposing sampling effect prevails. However, other studies find an opposite effect (Bhattacharjee et al. 2007, Hammond 2013), which underscores the complexity of the interaction between online piracy and sales.

A further explanation for the unequivocal outcomes of empirical studies are the methodological challenges involved. Several studies have shown that legal and illegal consumption go hand in hand: people who pirate are more often also legal consumers and on average, they consume larger volumes from legal sources than non-pirates (e.g. Eijk, Poort and Rutten 2010, Poort et al. 2018, Leung, Kretschmer and Meletti 2019). The underlying reason is that people who are more interested in music, films, series, books or games, tend to consume more via any available channel, leading to a positive correlation between consumption from illegal and legal channels. But even beyond that, there are remaining unobserved individual characteristics that tend to induce a positive correlation.

Several studies use a so-called instrumental variable (IV) approach to resolve this issue. The aim in this approach is to look for variables that correlate with online piracy but that affect consumption from legal sources only through the former. Earlier studies used instruments related to Internet availability and speed or individual Internet skills (e.g. Zentner 2006, Oberholzer-Gee and Strumpf 2007). That may have been a valid approach when content consumption via the Internet was almost synonymous with online piracy, but at the present day that can no longer be maintained. Poort et al. (2018) uses an instrument not related to Internet aptitude or availability but to moral attitudes towards ‘victimless crimes’ such as jaywalking, taking a flash photo in a museum and traveling in public transport without a ticket, as well as panel data analysis.

A related complexity is that both legal and illegal content supply have transformed and diversified over time. To legally consume recorded music for instance, one can buy a CD, rent it or borrow it from a library, purchase a digital file or use a streaming service such as Spotify. Also for illegal consumption, there are different channels. This implies that it can be misleading to interpret developments per channel in isolation: legal consumption via one channel cannibalizes consumption via another. Put differently, a decrease in CD purchases may be due to legal downloads and streams as well as online piracy. Ideally, one would estimate the effect of consumption via *all illegal channels* on *all legal channels*. This involves making assumptions about how to add streams, downloads and physical carriers.

The effect of enforcement on online piracy

Over the years, the entertainment industry has pursued a variety of strategies to combat online piracy, which can be distinguished in action against individual file sharers, the demand-side of the illegal market, and action against the supply-side, platforms that accommodate unauthorised file sharing. As can be seen from Figure 1, copyright enforcement has been a lively topic for research.

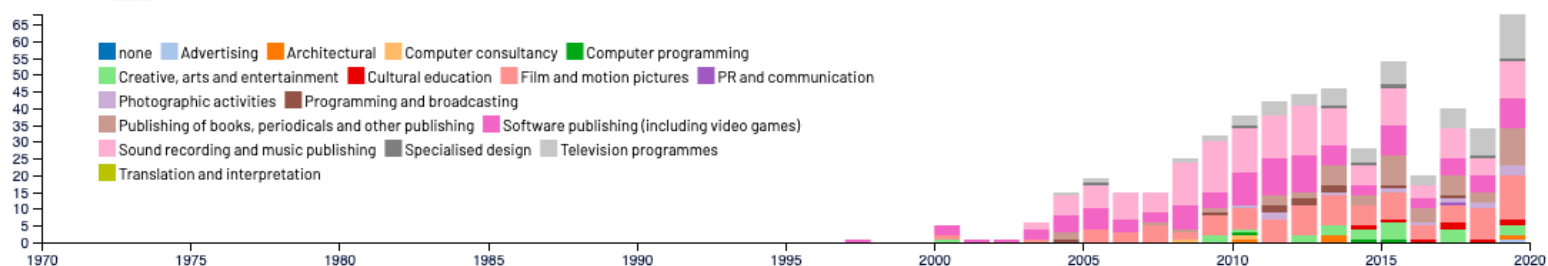
Studies by **Year** (y: # of studies stacked by industry, x: years)

Figure 1: Timeline of empirical studies on the policy issue of ‘enforcement’ (incl. piracy)

In June 2003, the Recording Industry Association of America (RIAA) initiated a series of lawsuits against individual file sharers. [Bhattacharjee et al. \(2006\)](#) found that in reaction to these lawsuits, the majority of substantial file sharers decreased the number of files shared typically by 90% and small time file sharers typically to a third. However, those who continued unauthorised file sharing increased their activity again after a [court ruling](#) that made it harder for the RIAA to request the names of file sharers from ISPs. Furthermore, the authors note that individuals may have gone off the radar, using more covert file sharing technologies.

[Adermon and Liang \(2011\)](#) study the effects of the implementation of the Intellectual Property Rights Enforcement Directive (IPRED) in Sweden on music and movie sales. They find a drop in Internet traffic during the six months following the implementation and conclude that it led to an increase in the sale of music. No significant effects were found on cinema visits or DVD sales. On the other hand, it was also shown in the study that “the reform effects more or less disappeared after six months except for digital music sales”. This suggests that it was primarily the publicity or awareness campaigns around the new legislation that had a temporary effect.

[Danaher, Smith, Telang, and Chen \(2012\)](#) study the effect of the French HADOPI legislation on digital sales in the iTunes store. Under this “three strikes” legislation, implemented in October 2009, infringers first receive a warning. When caught again, they get a second warning, and after this, suspension of their Internet connection may be ordered. Using a difference-in-difference approach comparing French data with other countries, the authors have found a positive effect on sales at iTunes. However, it is impossible to disentangle the effects of the actual legislation and the education campaigns accompanying the introduction of HADOPI. Most of the effect seems to have arisen before the (amended) legislation was finally accepted by the Constitutional Council and diminished since then.

A different strategy is directed towards platforms that accommodate file sharing, the supply side of the illegal market. The most direct way to do this is to shut down platforms/websites that host or direct to illegal content. However, this may be problematic if the platform is outside of the jurisdiction of enforcement. Also, a platform that is taken down may quickly re-emerge elsewhere or be succeeded. As was mentioned in the introduction, after its shutdown Napster was soon succeeded by alternative platforms such as KaZaA and BitTorrent clients that decentralise the file sharing process.

In January 2012, Megaupload, the most popular cyberlocker, was shut down. [Danaher and Smith \(2013\)](#) study the effects of this on piracy and legal online movie rentals and purchases. Their results suggest that the effect of the shutdown is temporary and lasts until consumers have found their ways to alternative suppliers of illegal video content. [Peukert, Claussen, and Kretschmer \(2015\)](#) also study the effect of the Megaupload shutdown and find a negative effect of the shutdown on box office revenues for smaller and mid-range movies. Only large blockbusters benefit from the shutdown. Overall, the effect they find is not statistically significant.

Along the same lines, [Aguilar, Claussen and Peukert \(2018\)](#) study the effect in Germany of the shutdown of an unauthorised video streaming website (kino.to). They conclude that “this intervention was not very effective in reducing unlicensed consumption or encouraging licensed consumption, mainly because users quickly switch to alternative unlicensed sites.” Moreover, they observe that after the shutdown, the unlicensed market has become more fragmented, making it more resilient to subsequent interventions.

An alternative approach which is applied in an increasing number of countries, particularly in Europe, is blocking access to infringing websites. There are different technical ways of blocking access, but the key element is that blocking can be done nationally or at the level of an Internet provider, without taking down the platform that is offering or directing to unauthorised content. Thus, jurisdiction is less of an obstacle. [Poort, Leenheer et al. \(2014\)](#) show that blocking access to individual websites has hardly any or no effect on consumption from illegal channels, as people can easily circumvent the blocking injunction or change to alternative websites. On the other hand, [Danaher, Smith and Telang \(2016\)](#) find evidence that simultaneously blocking many websites in the UK had a statistically significant negative effect on total online piracy and a positive effect on the use of legal video streaming platforms.

Other approaches to combat the supply of unauthorised content may involve cutting off revenue streams of infringing websites, by persuading advertisers and credit card companies to boycott them, removing search results and removing infringing apps from app stores.

Future directions for research

Overall, enforcement measures against online piracy have limited and often temporary effects. In addition, various studies point out that inadequate legal supply can increase online piracy. For instance, [Danaher, Dhanasobhon, Smith, and Telang \(2010\)](#) study the effect of the removal of NBC content from the iTunes store in December 2007 and its restoration in September 2008 on BitTorrent piracy and DVD sales on Amazon. They associate the removal with an 11.4% increase in piracy of this content, twice the legal digital sales prior to removal. After the content was restored, no significant effects on DVD sales were found, nor on piracy levels. Relatedly, [Poort and Weda \(2015\)](#) observe a decrease in online music piracy in the Netherlands between 2008 and 2012 while unauthorised consumption of films and TV content almost doubled. They link these opposite trends to the emergence of adequate legal services for downloading and streaming music (in particular Spotify) but the absence (at that time) of equally satisfactory services for audio-visual content.

Over the past years, the key to reviving the content industries after the downturn that started around the turn of the century, has been found in new models for legal supply. In the early days of online piracy, music was only available on physical carriers, bundled in albums. Consumers who only wanted a specific song were not served. Likewise, audio-visual content was tied to DVDs locked with technical protection measures. Twenty years later, all this has changed, and Spotify, Netflix, Steam, Amazon Kindle and Amazon Prime have become household names.

Online piracy indisputably played a role in forcing the content industry to change their ways. Sometimes, illegal supply even showed the path forward: iTunes, which revolutionized the music industry by selling music by the track, was launched two years after Napster basically offered the same service: illegally and for free. Nowadays, virtually unlimited legal supply of music, audio-visual content, books and games offered in flat-rate streaming models has reduced the incentive for consumers to turn to illegal sources. [Poort et al. \(2018\)](#) find a decline in online piracy in several other European countries. What had been imagined by John Lennon as early as 1971, came true for people's desire to possess a collection of physical records or CDs or even digital tracks. The majority of consumers no longer aspire to *own* a content collection, but rather pay a monthly fee to have *access* to it.

The evidence suggests that streaming platforms are the major driver that reduced online piracy over the past years. However, it also kindled new discussions and avenues for research. One important topic concerns the remuneration that individual artists derive from platforms such as Spotify: while global turnover from recorded music has been growing at a healthy rate over the past years, many musicians did not benefit from this. Another is the role of artificial intelligence and algorithms in the recommendation and prominence of content on platforms. Like the best place to hide a book is in a library, the best place to bury a song is amidst twenty million tracks on Spotify. Therefore, recommender systems are key to being seen, heard, or read on platforms. A third avenue for future research involves social inclusion. [Leung, Kretschmer and Meletti \(2019\)](#) point out that not everyone has found the way to streaming content and that digital consumption varies by age, gender, social class. An intriguing question for further research is whether these biases will persist, or will disappear over time, as age cohorts move on.

List of sources (beyond core scope of the Copyright Evidence Portal)

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