Legal, Economic and Cultural Aspects of File Sharing (*) (**)

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Abstract: This contribution seeks to identify the short and long-term economic and cultural effects of file sharing on music, films and games, while taking into account the legal context and policy developments. The short-term implications examined concern direct costs and benefits to society, whereas the long-term impact concerns changes in the industry's business models as well as in cultural diversity and the accessibility of content. It observes that the proliferation of digital distribution networks combined with the availability of digital technology among consumers has broken the entertainment industries' control over the access to their products. Only part of the decline in music sales can be attributed to file sharing. Despite the losses for the music industry, the increased accessibillity of culture renders the overall welfare effects of file sharing robustly positive. As a consequence the entertainment industries, particularly the music industry, have to explore new models to sustain their business.

Key words: filesharing, downloading/uploading, entertainment industry, cultural analysis, economic analysis, legal and policy analysis.

The introduction of digital technology in the media sector has far-reaching consequences for the role of media in society and the position of companies and institutions that have become the main providers of information and entertainment content. One of the many issues concerns the (unauthorised) distribution of entertainment products, mainly

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music, but also audiovisual products and games, through the internet. The growing phenomenon of file-sharing has been accompanied by a number of controversies on its implications for the rights holders (creators, performing artists and producers), its legal status and its wider economic and cultural implications. File sharing is the catch-all term for uploading and downloading, and encompasses a range of technologies.

Specifically in the United States and to a lesser extent in Europe the content industries have taken action in cases were they assumed that citizens violated the rights of authors, artists and producers and have organised extensive lobbies, successfully mobilising politicians to plea to make file sharing by individual citizens a violation of the law. Apart from the fact that those who fight file sharing claim that rights are violated, they state that cultural diversity will suffer and opportunities for new talent will dry up together with the industry's revenues.

The French Hadopi law drew attention from all over the continent while the court cases against the Swedish Pirate Bay made waves globally and led to the establishment of a political party called The Pirate Party that made it into the European Parliament. Those who oppose the anti-file sharing legislation claim that file sharing is the consequence of the industry's failure and argue that the industry should tap into new value-creating opportunities. They see opportunities to achieve cultural, social and economic value by new means.

The research reported here seeks to identify the short- and long-term economic and cultural effects of file sharing on music, films and games. The short-term implications examined concern direct costs and benefits to society. The long-term impact concerns changes in the industry's business models as well as in cultural diversity and the accessibility of content.

Conclusions are based on three analyses. Characteristics of and trends in the entertainment industry, its context and its business model are analysed using a broad range of existing information, from previous research to a number of consultations with industries' professionals. The legal/policy framework and the specific issues concerning copyright and filesharing are dealt with as part of a review of trends in the regulatory framework, nationally and within Europe. A representative survey of Dutch Internet users examines the practice of file sharing and the underlying reasons and motives. The results are compared with those from similar studies, to validate its outcomes and to estimate wider implications of the study's results. Hence, the conclusions presented are believed to have wider validity

then solely for the Netherlands, since similar circumstances apply in other countries. The entertainment industries examined operate globally and the contextual legal framework is European

■ Entertainment industry: music, film and games

The markets for film-, games- and music both in the Netherlands and abroad show different developments. Turnover from recorded music sales fell by around 30 % between 2004 and 2009 internationally. Despite their enormous growth of 940% in the same period, paid-for downloads have not been able to match this decline (IFPI 2010). The market for films is growing in some areas – DVD sales and cinema visits – but declining in others, e.g. DVD rentals. The games market is enjoying exuberant growth – at the console end of the market (both hardware and content), that is, as PC games have stopped moving. In the Netherlands, these diverging trends add up to a relatively stable turnover in the overall entertainment industry.

Operating in the experience market, the film, games and music industries leverage access to information and cultural products through authors' rights and neighbouring rights, with products that are primarily symbolic in nature. The business of the core companies in these sectors is based on the controlled access to the products created, in this case films, games and music recordings. Copyrights give them control over the use and marketing of their products, for which they may charge consumers. In many cases these companies are also producers of the content provided, employing creative personnel or making contractual arrangements with creators and performers who license the exploitation rights of their creations to publishing companies on an exclusive basis, either in film, music or gaming and in case of cross media production, to all of them.

A key feature of the entertainment industries is their specific combination of high fixed initial costs and relatively low variable costs, which translates into economies of scale. In addition, consumers are only able to establish the value of music, film and games through getting to know them, which makes them so-called experience goods. What is more, consumption of entertainment products is typically non-rival, i.e. use by one consumer does not necessarily affect another's enjoyment of them – especially if these products are available in digital format.

With information and communication being crucial features of these industries, trends in information and communication technologies have a decisive influence on the sector – digitisation being a current case in point. In fact, the games industry itself is a product of the digital revolution. File sharing, a by-product of digitisation and the central focus of this study, has major implications for the music, film and games industries.

■ Regulatory context

The regulatory context of filesharing in most European countries is based on traditional copyright related concepts, but increasingly is an issue of national and international attention.

Downloading and private copying

Within the meaning of copyright law, the downloading of copyrighted digital content constitutes a reproduction (copying). Every form of downloading (from P2P networks or a website, on a mobile phone, etc.) basically involves making a copy. In general, the prior consent of the right holder is required for making a copy of protected content. Whether or not content is offered in exchange for payment is not in itself an indication of whether the content concerned is offered with the consent of the right holder.

However, consent is not always required to download content. This applies to content that is not (or is no longer) copyrighted, such as material whose protection has expired (sound recordings more than 50 years' old, works of authors who have been dead for more than 70 years, etc.). Nor is consent required for downloading content that is not eligible for protection (facts, formulas and creations lacking their own original character). Likewise, 'torrent' files, which specify the name, size and location of a file, do not enjoy copyright protection.

Downloading can be lawful even without prior consent if one of the copyright exceptions is applicable. The most relevant exception for the purposes of the present study is the exception for private use. This means that consumers may download content from P2P networks, websites and social networks (Hyves, MySpace, etc.) even without the consent of the right holder. Both non-economic and economic arguments have been advanced

for this private use exception. Non-economic arguments include protection of the user's privacy, promotion of participation in cultural and intellectual life, personal development and encouragement of creativity and freedom of expression. Economic arguments are the high costs and practical difficulties that would make it impracticable to enforce a prohibition on making copies for private use. Another consideration mentioned in the context of the private use exception is the need to strike a balance between, on the one hand, the aims of copyright (i.e. encouraging creativity, innovation and wider distribution) and the cost/benefit ratio (limiting the possibility for third parties to use existing creations) and, on the other, encouraging authors and producers. An additional condition for making digital copies for private use is that a fair levy is paid. These types of levies can be linked to blank tapes/cd's/dvd's/harddisks and/or recording devices.

However, countries may also choose not to allow certain types of private copying or limit the scope. For example, the private copying of games is often not allowed (or restricted to copies for the use and study of the program for the purpose of the work concerned or for making a reserve copy), nor is breaking the protection schemes of DVD's. Private copying might be limited to short parts of the work. More importantly, many countries have chosen not to allow private copying from an 'illegal source'. A source is considered to be illegal if the copied content is distributed without the consent of the copyright holder or if the downloaded file has been produced without the consent of the copyright holder. Arguments against such a requirement are that it is generally difficult for users to determine whether or not a source is legal and that such a requirement would be difficult to enforce and could adversely affect the amount of the payment owed to the right holder for private copies.

Enforcement instruments and procedures

A distinction can be made between civil and criminal instruments and procedures in relation to the enforcement of copyright and action taken in this connection to prevent unlawful acts. The civil law rules for copyright enforcement are partly of a specific nature (e.g. the rules in copyright acts) and partly of a general nature (including tort law). Copyright can be enforced against anyone committing an infringement. Various instruments are available, including an injunction backed by a penalty for non-compliance (also in the case of imminent infringements), damages, surrender of profits, attachment, destruction of infringing content and means of production, claim

for ownership of such content or means of production, recall of infringing products from the trade, and demands for personal information (name and address etc.) of infringers from the intermediaries (such as Internet Service Providers). Provisions on surrender of profits and attachment focus specifically on infringers who act in a commercial or professional capacity. When imposing enforcement measures the courts must weigh the interests of the defendant (such as privacy and freedom of expression) against those of the right holder.

As regards means of enforcement under criminal law, it should be noted that an individual user who infringes copyright (e.g. by uploading without authorization) may be guilty of an indictable offence if he acted with intent. Not every instance of unauthorized uploading is committed with intent. Intent may be doubted, for example, in the above situations where users make use of P2P or BitTorrent software. Conditional intent may be held to exist in certain circumstances, namely where users "knowingly expose themselves to the far from negligible chance …" Users might possibly be presumed to realize that using P2P software can also result in the distribution of copyrighted content. The level of actual awareness is therefore a relevant element. Other aspects that have to be taken into account are questions such as proving that the publication was actually committed by the suspect or the question whether or not the offence is committed in a commercial or professional capacity. Finally, it should be noted that criminal law in general serves as an ultimate remedy, which is applied mainly where the public interest is affected by the infringement.

Policy developments

The introduction of a special law in France - intended to criminalize downloading by individual users - generated a lot of discussion throughout Europe. [1] The law, known as the 'Loi Hadopi', provides the possibility to cut off Internet access because of copyright infringements (after two previous warnings). The original version of the law received substantial criticism and was turned down by the French constitutional court. It didn't provide enough legal guarantees, more in particular it would have allowed cutting off Internet

[1] This website provides a good overview on both the French proposal and the review of the European telecommunications package: http://www.laquadrature.net. The website also provides info on the Anti-Counterfeiting Trade Agreement (ACTA)-negotiations. Measures against file sharing are discussed as part of the agreement.

user without a judicial procedure. In the final version, the intervention of a judge is obligatory. Nonetheless, it remains to be seen whether such type of legislation is enforceable in practice. It will require substantial resources (police, courts) and will incriminate a large part of the population. Also, the risk of filesharing going underground (by using encryption) or moving to alternatives (usenet) is mentioned. Some European countries are discussing whether they should introduce regulation that matches the French one. Other countries take a more cautious approach by taking a broader perspective.

The position of file sharing has been heavily debated during the Review of the European communication framework. The European Parliament rejected proposals for stricter rules on copyright infringements. Finally a compromise was concluded. Article 1, sub 3 of the Universal Service Directive now reads as follows:

> "This Directive neither mandates nor prohibits conditions, imposed by providers of publicly available electronic communications and services, limiting end-users' access to, and/or use of, services and applications, where allowed under national law and in conformity with Community law, but lays down an obligation to provide information regarding such conditions. National measures regarding end-users' access to, or use of, services and applications through electronic communications networks shall respect the fundamental rights and freedoms of natural persons, including in relation to privacy and due process, as defined in Article 6 of the European Convention for the Protection of Human Rights and Fundamental Freedoms." [2]

This text clearly aims at a more balanced approach although it doesn't entirely exclude the French solution. The issue remains a priority on the European agenda and is subject of further consultation. [3]

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[2] Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws, Publ L337 d.d. 18/12/2009. (Article 1, sub 3, universal service directive).

[3] See for example the recent Public consultation on "Content Online": http://ec.europa.eu/avpolicy/other_actions/content_online

■ Economics of file sharing

Worldwide, sales of recorded music have been in decline for several years, while file sharing is growing rapidly. Is this a mere correlation, or is it safe to say that there is a causal relation? Although a widely debated phenomenon, reliable numbers on the incidence and economics of file sharing are relatively sparse, particularly for films and games. A survey held in the Netherlands as part of the research underlying this article aimed at filling this gap in order to estimate short-term welfare effects of file sharing.

Downloaders and downloads

Downloading from unauthorised sources is a widespread and growing global phenomenon. IFPI (2010) states that in 2009, the proportion of file sharers was around 21% of the Internet users in the top five European markets. In a French survey, 38% of the Internet users admitted to having downloaded music from torrent sites, while about 28% downloaded in the last year (*Rapport au Ministre de la Culture et de la Communication*, 2010). Figures for the United States, where lawsuits against individual file sharers have drawn considerable media attention, are similar: in December 2007, 37% of the internet users admitted to having downloaded music; 27% downloaded video files (PEW, 2009). File sharing figures tend to be higher in countries with higher broadband penetration and much higher among young people. For instance, a survey in the UK showed that 63% of young respondents download music (University of Hertfordshire, 2008). In the United States, 58% of the age bracket from 18 to 29 years downloaded music (PEW, 2009). File sharing of films and games is less common, but is rapidly catching up as residential bandwidth increases. Whereas estimates of the volume of unauthorised download traffic vary strongly, it is clear that it accounts for many billions of files per year worldwide and makes up a substantial share of international Internet traffic.

A Dutch survey on downloading music, films and games

To gain a better understanding of consumers' file-sharing activity and its impact on the entertainment industries, a representative survey of a sample of the Dutch population was conducted in April 2008. A total 1,464 respondents completed questions about music (98% of the sample), 1405 about films (94%) and 778 about games (53%).

Size and scope

Free downloading or file sharing is a very common phenomenon across all socio-demographic groups of the Dutch population. 44% of the Dutch Internet population over the age of 15 that had Internet access, admit to file sharing on one or more occasions in the previous 12 months, which works out at around 4.7 million people. Music is the most downloaded entertainment product: 40% of those who have Internet access do so. Note that this figure is remarkably in tune with figures in France and the United States. Films (13%) and games (9%) follow at some distance. File sharers are predominantly young (15-24 years), male, particularly when it comes to films and games.

A notable finding is that a large number of file sharers are unable to say what method or technology they use for downloading, e.g. P2P, Usenet, newsgroups, FTP address. Most file sharers said they only engaged in downloading and did not upload. This would seem improbable as most P2P programs upload automatically. It seems likely that many file sharers are unaware that they are uploading. A mere one in twenty file sharers admit to adding new uploads themselves.

Buying and file sharing turn out to go hand in hand. Music sharers are as equally likely to buy music as other people: 68% of file sharers also purchase music. File sharers buy as much music as non-file sharers. However, file sharers spend more money on merchandise and go to concerts significantly more frequently.

As for films, file sharers turn out to buy significantly more DVDs than non-file sharers. On average, file sharers and non-file sharers go to the cinema equally often.

Game sharers also buy games, and significantly more frequently too: 67% of file sharers are buyers as well. And if they buy, they buy significantly more games than non-file sharers. These results are summarized in Table 1.

Among file sharers, 63% of music downloaders might yet buy the music they first got for free online. Their main reasons for buying are loving the music – a key motive for over 80% – or wishing to support the artist (over 50%). Owning the CD sleeve and booklet are mentioned by a third of eventual buyers, as well as the higher quality of the CD. Forty-eight per cent of film sharers will buy a previously downloaded film at a later date, citing such reasons as liking it a lot or wanting the extra features the DVD offers.

Between 50% and 60% download to discover new genres and directors/actors. 63% of game sharers report sometimes buying a previously downloaded game at a later date. Their main reasons include thinking it a really good game. Wanting to own the original box and game were also frequently mentioned.

Table 1 - Differences in purchasing behaviour between file sharers and non-file sharers

	Music	*Films*	*Games*
Buyers in the past 12 months: Yes/No	No difference	No difference	File sharers buy more often (61% vs 57%)
If a buyer in previous 12 months: number	No difference	File sharers buy more (12.0 vs 8.0 films)	File sharers buy more (4.2 vs 2.7 games)
Related products	File sharers visit concerts more often and buy more merchandise	No difference in cinema visits	No difference in buying merchandise

All in all, these figures show that there is no sharp divide between file sharers and others in their buying behaviour. On the contrary, when it comes to attending concerts, and expenses on DVDs and games, file sharers are the industry's largest customers. Note that no causal relationship is implied here. Aficionados of music, games or films will typically buy more, get into related products more but also download more.

Price

In order to estimate the turnover that the music industry may be missing out on due to file sharing, the survey asked file sharers what they would consider a reasonable price for a CD, film or game they would really like to own, and how likely they would be to purchase it for this price. Please note that this is more than what they would be willing to pay on average for the products they are downloading. Figure 1 reveals what percentage of file sharers consider reasonable prices. Three-quarters of music sharers are willing to pay at least €8 for a CD (see also Table 2). The average 'reasonable price' for music is higher than for DVDs, which turns out to be €5.

Figure 1 - What music sharers find a reasonable price for a much-wanted CD

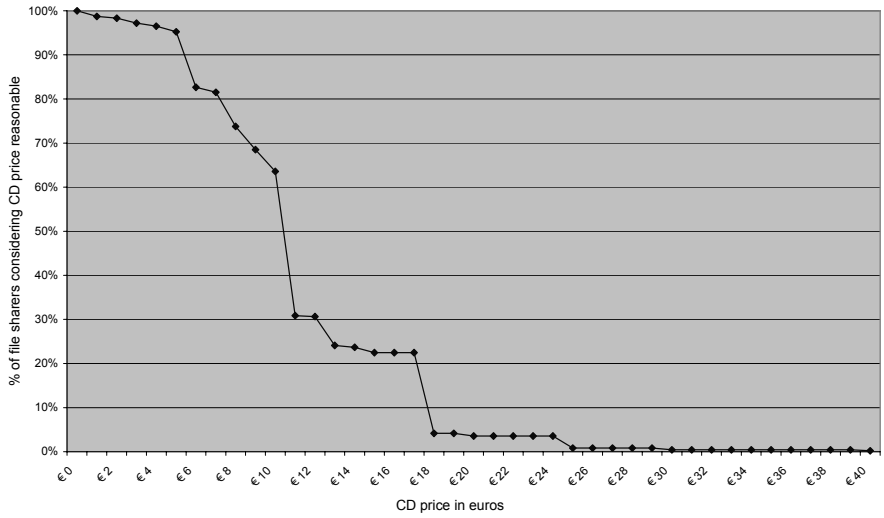


Table 2 - Reasonable price according to file sharers

	Music	*Films*	*Games*
75 percentile	€8	€5	€7
Median	€9	€9	€19
Top quartile	€12	€11	€24

Causal mechanisms how file sharing may relate to sales

The effect of file sharing on sales is ambiguous. Research on this issue results in descriptions of mechanisms through which file sharing either results in an increase or, conversely, in a decrease in digital media sales, or in having no impact on sales whatsoever. These various potential mechanisms are summarized in Table 3. The most prominent positive effect is the sampling effect: consumers are introduced to new music and this creates new demand. When downloading serves consumers whose demand is driven by a lack of purchasing power, the effect on sales is neutral. File sharing has a negative impact on buying when it replaces paid-for consumption.

Table 3 - Possible effects of file sharing on the purchase of CDs, films, games and related products

Positive	- File sharing introduces consumers to music, films and games (and to artists and genres), thus creating demand. This is known as the sampling effect (SHAPIRO & VARIAN, 1999; LIEBOWITZ, 2006). - File sharing allows consumers to pool their demand, resulting in increased demand. (*) - File sharing enhances willingness to pay and demand for concerts and related products (complementary demand). - File sharing enhances the popularity of products, boosting demand driven by a lack of purchasing power (network effect). (**)
Neutral	- File sharing meets the demand of consumers who are not, or not sufficiently, willing to pay and subsequently are not served by the manufacturer. - File sharing meets a demand for products that are not offered by manufacturers (e.g. film files for iPods).
Negative	- File sharing substitutes for the purchase of music, DVDs or games or cinema visits (substitution). - File sharing results in the deferred purchase of music, DVDs or games, at a lower price than the price at launch. - Sampling results in sales displacement as a result of fewer bad buys. (***)

(*) This applies in particular to the exchange of media with friends rather than to the anonymous exchange through P2P networks.

(**) This applies in particular to the use of software for which network effects are clear. A (modest) network effect may also be found for lifestyle products such as music, films and games. Unauthorised use can also, under certain circumstances, have a positive effect on profits and investments without network effects as it can weaken competition between products. Jain (2008).

(***) ROB & WALDFOGEL (2006) show that on average people's appreciation of music is lower after it has been bought or downloaded than prior to the purchase.

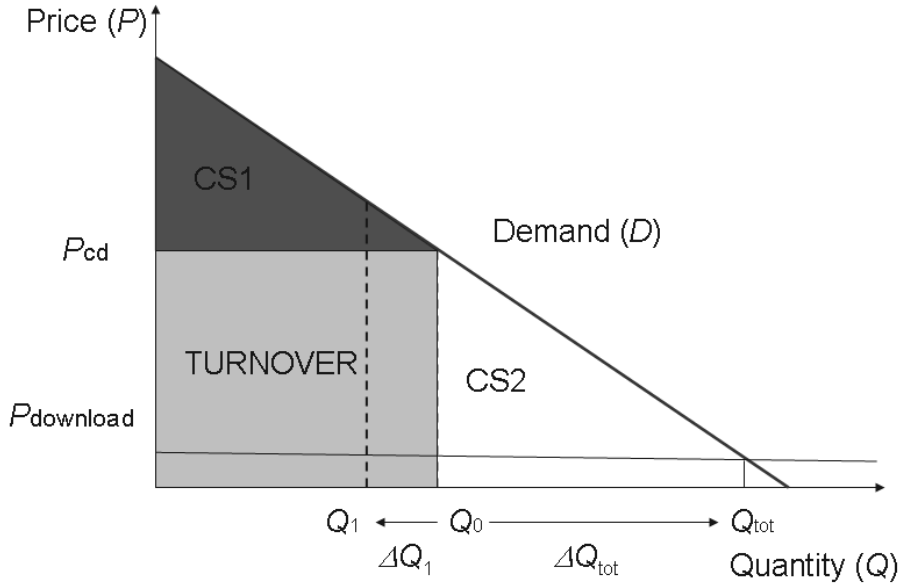
Given the different possible effects above, it may not come as a surprise that the findings of empirical studies into the causal or other relationships between downloading and buying music vary widely, ranging from positive to neutral to negative. There does not appear to be a clear relationship between the decline in sales and file sharing. The effect on revenue from concerts and merchandise is unknown. The state of play in the film industry has hardly been investigated to date, but available findings suggest a negative relationship. In the games industry download volumes are low and its implications largely unknown.

Short term welfare effects of downloading music

The main conclusion that can be drawn from the above is that not every file downloaded does result in one less CD, DVD or game sold. The degree of substitution is difficult to determine. Below we seek to describe the scope

of file sharing and its short-term effects. The analytical framework used in this analysis is a welfare-theoretical approach, similar to the one in ROB & WALDFOGEL (2006). They apply it to calculate the welfare gains and losses for the music industry based on the observed relationship between downloading and purchasing music.

Figure 2 - Media demand and wealth effects of file sharing



The premises of this approach are illustrated in Figure 2, where the diagonal line represents the demand (D) for CDs in relation to price. In a situation without file-sharing activity, a Q_0 number of CDs will be sold at price P_{cd}, resulting in a turnover of $P_{cd} \times Q_0$ (the lightly shaded rectangle 'TURNOVER'). Given the high fixed costs and the low marginal costs that are so characteristic of the entertainment industry, in this particular case the gains for the publisher or the producer – the producer surplus – roughly equal turnover. [4] Consumers may also benefit in that some would have been prepared to pay a higher price for a CD than they actually paid. Taken together, these amounts constitute the consumer surplus, represented by

[4] To be more precise: the marginal costs are low, but the fixed recording costs (or costs of developing a game) have already been incurred and are 'sunk' In order to determine the absolute producer surplus, the fixed costs need to be subtracted from total revenues. The current approach suffices for an estimation of relative differences.

the darkly shaded triangle (CS1) in the graph. The creation of welfare in the economy is defined as the consumer surplus plus the producer surplus.

Now assume that consumers have the opportunity of downloading the product. The horizontal line $P_{download}$ represents the costs (in terms of effort and time) of file sharing. Far more consumers (Q_{tot}) are interested in the music at this lower price and consumption increases by ΔQtot because consumers who initially were not prepared to pay the higher price now buy the product (Table 3, effect 5). At the same time, however, some of the consumers who used to buy the CD may now download the music, resulting in a reduction in demand for the CD by ΔQ_1 (substitution: Table 3, effect 7). In this example this would amount to a total of $\Delta Q_1 + \Delta Q_{tot}$ consumers downloading the music, resulting in turn in lost revenues for producers (in this case this is equated with a lower producer surplus) of $\Delta Q_1 \times P_{cd}$. This welfare is not lost but goes directly into the pockets of consumers who choose to download rather than to buy, thus creating additional consumer surplus. Even more consumer surplus is created and represented in the graph as the triangle between demand D, the initial vertical line Q0 and the download costs $P_{download}$. This is a new surplus compared with the initial situation and constitutes welfare gains to society.

In summary, we saw that this stylised static analysis substitution resulted in a redistribution of welfare (producer surplus becoming consumer surplus) without a net effect. Meeting demand that has insufficient willingness to pay the market price creates welfare gains for society. The positive impact of file sharing on sales, mainly attributable to sampling, mitigates the degree of substitution. [5] If the sampling effect or other positive effects were to dominate, demand would even increase on balance and both the consumer and the producer surplus would rise.

The above effects can be quantified using:
- the number of downloads of music, films and games ($\Delta Q_1 + \Delta Q_{tot}$)
- the number of file sharers who would buy music if downloading were not possible (ΔQ_1)
- file sharers' (average) valuations or willingness to pay

Based on a compilation of various sources, estimates for the Dutch market have been put at 1.5-2 billion music tracks downloaded ($\Delta Q_1 + \Delta Q_{tot}$)

[5] ROB & WALDFOGEL's estimate the transfer amounted to $25 per student in the period 1999-2003. The welfare gains for society stood at $70 per student, almost three times the transfer.

per year. This amount to 7.5 downloads for each track sold in the Netherlands, or 300 to 400 tracks (20 to 25 albums) downloaded per year for each of the 4.7 million music downloaders mentioned above. The market value for all these downloads amounts to the same volume in euros, but may not be equated with lost revenues.

The next step is to determine the extent of substitution. Based on the number of downloads given above, a substitution ratio of 20%, as used by Rob and Waldfogel, would seem unrealistically high as this would imply that 300-400 million fewer tracks are sold as a result of file sharing, which is equivalent to one-and-a-half to twice the downturn in sales reported for the Dutch music industry since 1999. Taking PEITZ & WAELBROEK's (2004) estimate as an upper limit, namely that a 20% decline in total sales may be attributed to file sharing, which is still relatively high, this would result in lost revenues of at most €100 million in the Netherlands. This in turn is equivalent to a *substitution ratio of at most 5-7%*, or one track less sold for every 15 to 20 downloads.

The third step is to determine the value of downloads that do not result in substitution: the additional consumer surplus. As shown in Figure 2, the welfare gains would be more or less equal to half the retail value of the downloads. ROB & WALDFOGEL (2006) found that on average, students' valuation of downloaded music was one-third to half lower than that for purchased music.

The additional consumer surplus can be estimated using data about file sharers' willingness to pay. These data were collected in the consumer survey and were depicted in Figure 1. The area under the curve in Figure 1 is equal to the weighted average 'reasonable price' given by the file sharers, namely €10.67 for a CD. Multiplying this reasonable price by the 69% of respondents who said they would 'probably' or 'most probably' buy the CD for this price, puts the average actual willingness to pay for a much-wanted downloaded CD at €7.36. This is 40% lower than the average price of a CD sold in 2007 (€12.31) and is well in line with the 33-50% lower valuation found by Rob and Waldfogel and the estimate of half the price that can be derived from Figure 2. [6]

[6] Figure 1 shows at which price maximum turnover from downloading would be achieved - namely €10. Demand drops steeply at higher prices (such as the current average of €12.31).

Figure 1 also shows that about one quarter of file sharers felt that a price that was higher than the average retail price of €12.31 would still be reasonable. Again, adjusting this for the likelihood that consumers will actually buy the CD for that price, means that roughly 17% of all file sharers would be willing to buy the CD for the retail price if downloading were not possible. This percentage is slightly lower than the 20% found by Rob and Waldfogel, but much higher than the 5-7% derived from the estimates made by PEITZ & WAELBROECK. An important difference, however, is that this substitution ratio does not relate to all downloads, but to highly valued downloads only. [7]

In order to calculate the additional consumer surplus, one cannot simply multiply the willingness to pay for *highly valued music* by the total download volume of 1.5 to 2 billion tracks a year. Much-wanted downloads tend to be the downloads that file sharers keep. Young consumers keep the equivalent of an average of 8-16 months of downloaded material on their computers or players (University of Hertfordshire, 2008). For people under the age of 25 this amounts to about 1000 MP3s. Using the average willingness to pay 60% of the retail price, this collection represents an additional consumer surplus of around €600. For the 25-plus age bracket, the average download collection totalled 200 MP3s per person, which is equivalent to a surplus of around €120. Downloaded music files for all music sharers taken together represent a value of €1-1.5 billion.

This value has been built up over a period of several years, in some cases even from as early as the launch of Napster in 1999. The *consumer surplus* created by music sharing in the Netherlands would then amount to an estimated minimum of *€200 million per year*. Based on the above assumptions, this is a conservative estimate (collections have been estimated to have been built up over a long period of time, namely an average of 5 to 8 years, and the surplus for deleted downloads has been set at zero). At most half this amount is generated at the expense of the producer surplus and therefore constitutes a transfer of welfare. The remainder constitutes welfare gains.

Needless to say, these calculations are necessarily based on assumptions and contain many uncertainties. Many of the underlying data are not precisely known. That said, it is clear that the direction and

[7] Note also that this is only one side of the coin – namely substitution. A positive contribution of the sampling effect could explain why actual impact on turnover is lower.

magnitude of the amounts calculated are plausible. An annual surplus of €200 million for 1.5 to 2 billion downloaded tracks gives an average value of 10-13 cents per track, about one-eighth to one-tenth of the cost of tracks (€0.99) on iTunes and other sites.

The consumer survey referred to earlier showed that not all music genres are equally popular among file sharers. Whereas classical music is downloaded relatively infrequently, file sharing of genres such as soul/urban, experimental, rock, dance and pop is all the more frequent. This is in line with the fact that the younger age brackets are fervent file sharers. [8] Sales of these popular youth genres are therefore likely to be more heavily impacted by file sharing. That said, the consumer survey also revealed that experimental and avant-garde music are frequently downloaded even though few respondents actually stated a preference for these genres. In this light it is worth taking a closer look at BLACKBURN's (2004) findings, which showed that while popular music artists are negatively impacted by file sharing, lesser known artists benefit. In principle, this development favourably affects the diversity of supply, yet a decline in income from popular artists can put pressure on investments in talent development.

■ Conclusions and recommendations

The entertainment industry is experiencing the effects of file sharing. The proliferation of digital distribution networks combined with the availability of digital technology among consumers has actually broken the entertainment industries' control over the access to their products. Turnover in the recorded music industry is in decline, but only part of this decline can be attributed to file sharing. Conversely, only a small fraction of the content exchanged through file sharing networks comes at the expense of industry turnover. This renders the overall welfare effects of file sharing robustly positive.

Actually the fear of all of this happening, prevented the music industry from providing the consumers, ready to consume music online, with downloads. For a considerable amount of time, the industry remained unable

[8] Note that according to the NVPI, the market share of classical CD sales has dropped from a stable 10% up until 2002, to 5% in 2005. This underlines once again that the relationship between the drop in CD sales and file sharing is an ambiguous one.

to stem the tide of unlicensed music file sharing with their conservative strategy of abstaining from innovation, promoting legal measures against supposed offences and digital rights management. This strategy resulted in the current backlash, providing space for a new entrant establishing a major brand in the online music business: Apple's iTunes. Reinvention of the business model looks like the only way out for the traditional players in the music industry. The music economy appears to be facing a shift in spending away from recordings to concert tickets and, to a lesser degree, merchandise. The advance of so called 360-degree artist contracts is a step towards greater diversification of sources of income and underlines the clear connection that exists between various revenue sources in different music markets: recordings, live music and merchandise. Interestingly, recent research for Sweden indicates that total revenues from recorded music, live concerts and collecting societies remained roughly stable between 2000 and 2008 (JOHANSSON & LARSSON, 2009).

Yet, the film industry is feeling the file-sharing pain less than is the music business, but this looks about to change as broadband is rolled out further. The 'digitally native' games industry would seem better positioned to respond to the impact of file sharing, although some segments of the market, particularly the one for PC games, witnesses effects similar to the music industry. The entertainment industry should step outside the box of the traditional value chain and venture into a host of other markets through the creation of value networks. A strategy that focuses solely on lawsuits and digital rights management (DRM) is not the best response, in particular as it remains to be seen whether a fully authorised, paid-for downloading market would generate sufficient revenues to stay in business. Even in a hypothetical future without file sharing, a hybrid business model would appear to be the solution.

The survey held among Dutch Internet users has shown that file sharing is here to stay and that people who download are at the same time important customers of the entertainment industry. The point of no return has been reached and it is highly unlikely that the industry will be able to turn the tide. What is more, there is no guarantee that a situation will ever arise in which a majority of digital downloads will come from an authorised source. Whatever the future brings, the time that will pass between now and a 'clean' future is too long for the industry to sit back and wait, without making an effort to innovate. And so the entertainment industry will have to work actively towards innovation on all fronts. New models worth developing, for example, are those that seek to achieve commercial diversification or that match supply and end-user needs more closely. In such a context, criminalizing

large parts of the population makes no sense. Enforcement should focus on large scale and/or commercial upload activities.

In terms of actual cultural diversity and accessibility there are at the moment no signs of impoverishment or the raising of significant barriers. Although the evidence is merely anecdotic, it turns out that online media provide a number of new avenues for creators and producers to reach their intended audiences, without significant gatekeepers preventing them from doing so. It is up to government, as part of its cultural policy and its policy to strengthen the country's innovative power and competitive edge, to consider identifying the promotion of innovation in the entertainment industry as a key priority. Introducing new protective measures does not seem the right way to go.

Monitoring and research

This is one of the first studies to focus on the broader implications for society of file sharing of various forms of content. As this is an industry in flux, developments need to be monitored on an ongoing basis. An important question in this respect is whether file sharing is likely to have a major impact on the DVD market in the foreseeable future. It also remains to be seen how the games market will develop in light of the growing broadband penetration in consumers' homes. Another uncertain factor is which business models will work best in the music industry. Will the delivery of official downloads be the most appropriate response to declining sales, or are more radical changes needed? Nor do we know what shape the growing availability of broadband Internet access and the further development of bandwidth will take and what the effect will be in other sectors in the entertainment industry.

This study has also shown that information about certain major sectors of the industries researched here, such as the live music sector, is in short supply. It is often claimed – this report being no exception – that live concerts are growing at the expense of CD sales. The Swedish example mentioned earlier seems to confirm this claim, but internationally much remains uncertain about the magnitude of the assumed growth and the degree to which it could make up the loss in CD sales.

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