Estimating displacement rates of copyrighted content in the EU

First progress report

Client: European Commission, DG Internal Market and Services

Rotterdam, 21 March 2014

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[redacted]

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ECORYS Nederland BV
Watermanweg 44
3067 GG Rotterdam

P.O. Box 4175
3006 AD Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com
Registration no. 24316726

W www.ecorys.nl

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1 Research questions and scope

1.1 Research questions and need to refine the scope

The two main research questions are:

1. How do online copyright infringements affect sales of copyrighted content (music, audio-visual, video games and books)?
2. How much are consumers willing to pay for legal content?

Effects of streaming (free or paid for) and of differences in legislation need to be controlled for in the estimates of the displacement rate of copyrighted content. To this end, a comparison of the current situation is made with a so-called full counterfactual: the full absence of possibilities to download content without the permission of the copyright holders.

The research questions are mainly answered on the basis of an online questionnaire among the internet using population. To implement the study, the scope of content and the internet using population need to be defined in more detail, as is done in the next two sections.

1.2 Content

From desk research and also the summary of Clickstream data provided by JRC – ICPT it has become evident that all types of media content can be downloaded and streamed both from legal (or “lawful”) and from illegal (or “unlawful”) sources. In most EU countries, downloading from unlawful sources is itself illegal, in a few it is not, but this may soon change depending on a case pending at the CJEU.

The research team have considered avoiding the terms “illegal” and even “unlawful”. But we consider it crucial to make clear what we mean in the questionnaire. There is a huge variety of sources one can download from, and there is a danger that respondents do not correctly recognize the examples of sources as being legal or illegal and hence do not classify their own behaviour properly. For example, they might think downloading from Mega-upload is legal. Streaming music and video from YouTube is legal, but is a lot of material on YouTube that is placed without authorisation or consent from copyright holders, which implies that such softer ways to distinguish sources in the survey, would most probably lead to over-reporting of ‘illegal’ behaviour without a possibility to correct for this. Rather than introducing the respondent into these finer points, we consider it best to refer to “unlawful” streaming or downloading to clearly describe this way of using internet and to support this with examples.

In this study, “unlawful” consumption is limited to downloading and streaming. Home copies (putting copyrighted content on a USB stick to share with friends or family) are beyond the scope of the study. This is one limitation of the restriction to online copyright infringements which our literature research made us aware of. According to a recent PwC study, the percentage of Dutch internet users who have ‘home copied’ music or audio-visual content (from physical carriers such as cd-r, dvd-r) for free is roughly half the percentage of free downloads (from both legal and illegal sources): 18 versus 30 per cent for music and 8 versus 21 per cent for audio-visual.[1] This means that the

[1] PwC (2012), Thuiskopie, Onderzoek naar gederfde inkomsten door thuiskopieën (Home copies, Research of sales displaced by home copies), http://ie-forum.nl/backoffice/uploads/file/IE-

outcome of our study can be interpreted as a lower bound estimate because home copied content is not included.

We also considered carefully which forms of media consumption could or should be included in the study. Most are clearly indicated in the invitation to tender. Certain choices need to be made however about how broadly TV should be encompassed, whether to include borrowing books from libraries as well and whether to include clones of popular online games. The table below provides an overview of our classification of content.

Table 1.1 Classification of media by forms of availability

	Online		Offline
	"Lawful" (download & stream)	"Unlawful" (download & stream)	Buying or renting is inclusive via web shops)
Music	Excluding online concert registrations	Excluding online concert registrations	Live concerts Buying/renting CDs, LPs Excluding listening to the radio
Audio-visual – films	All included	All included	Cinema visits Buying/renting DVDs, Blu-ray disks
Audio-visual – TV	Limited to TV-series Exclusive documentaries, porn, sport	Limited to TV-series Exclusive documentaries, porn, sport	Buying/renting TV-series Excluding watching TV
Books	Audiobooks and e-books	Audiobooks and e-books	Buying books Borrowing books and audiobooks from a library
Computer games	PC / console / online / apps and tablets	Excluding clone games	Buying video games

1.3 Internet using population

The target population of this study is the internet using population and the results of this study need to be representative for this population. To ensure its representativeness, the composition of the internet using population needs to be known. For the composition of the internet using population, we propose to use Eurostat data on internet use, and specifically the answer to when the individual used internet for the last time being the last 12 months.

We use a breakdown of internet use by gender and age because gender and age are known for all panel members. Education is known for most panel members, but not for recent members recruited via social media. The Eurostat data clearly reveal that gender differences in internet use are negligible and that age is the determining factor.

The data also reveal that nearly the whole population aged between 16 and 24 years old in the countries covered have used internet in the past year. For persons below the age of 15 generally no recent data on internet use are available, but older data from 2005 and 2006 indicate that internet use is similar to that of persons between 16 and 24 years old; somewhat lower in Poland and somewhat higher in Spain. Therefore, when weighting the results, we will assume that the

Forum%20PriceWaterhouseCoopers,%20Thuiskopie%20onderzoek%20naar%20gederfde%20inkomsten%20door%20thuiskopie%C3%ABn,%2023%20oktober%202012_.pdf

same proportion of persons aged between 12-15 use the internet (at least once a year) as those aged 16-24, i.e. 99 per cent in the United Kingdom and 98 per cent in the other countries.

Table 1.2 Internet using population by country, age and gender in 2013 (in %)

(Last time the individual used internet was in the last 12 months)

	France	Germany	Poland	Spain	Sweden	UK
15 or less	89 [b]; xx	97 [c]	79 [a]; xx	95 [b]; xx	xx	xx
16-24	84 [b]; 98	98	86 [a]; 98	86 [b]; 98	98	99
Males	98	98	97	98	98	98
Females	98	99	98	98	99	100
25-34	96	98	92	94	100	99
35-44	93	97	82	86	100	97
45-54	86	91	62	74	99	93
55-64	72	75	38	48	94	84
55-74	62	64	30	37	86	76
25-54	96	95	79	84	100	96
Males	92	94	78	85	100	95
Females	91	94	80	83	99	97
Total	84	86	65	74	95	91

Source: Eurostat web page, table isoc_ci_ifp_iu

xx Means: no data available

a) Data for 2005

b) Data for 2006

c) Data for 2012

Respondents of the online questionnaire will be admitted to the copyright survey until quota per category of age and gender are fulfilled. These quota are calculated as percentages of 4,500 for each of the six countries. Based on the above table, the percentages for the quota are calculated, resulting in the percentages presented in the table below for the adult sub-population (aged 18-75). For the sub-population of minors a specific quotum of 500 per country will be used.

Table 1.3 Percentage distribution of the adult internet using sub-population (in %)

	France		Germany		Poland		Spain		Sweden		UK	
	M	F	M	F	M	F	M	F	M	F	M	F
18-24	7	7	7	7	12	12	8	8	7	6	7	7
25-34	12	12	10	10	14	13	15	15	10	10	11	12
35-44	12	12	13	13	11	11	13	13	11	10	12	12
45-54	10	10	10	10	9	9	9	9	10	9	9	10
55-64	5	6	6	7	3	3	4	4	9	9	6	7
65-75	3	4	3	4	1	1	1	2	4	4	3	4
Total	100		100		100		100		100		100	

2 Methodology

2.1 Direct regression versus structural demand equation

In most of the literature on the displacement of sales by illegal downloading, the following equation is estimated:

$$Legal\ downloads = a_0 + a_1 \times Illegal\ downloads + a_2 \times Control\ variables + \varepsilon_a.$$

Here ε denotes an error term. The most important control variables are for taste for music or audio-visual, and for other alternatives such as offline purchases or recently, streaming. One drawback of this type of equation is that (price) substitution is not measured directly. This is a serious drawback and worth devoting attention to in the final report, as below.

Price substitution can be estimated in theory from a structural demand equation, for a example a translog generalization of the Cobb-Douglas consumption function. In such an equation, log expenditures are often written as a function of log expenditures on the different products, e.g.

$$\ln(Total\ expenditure) = a_0 + a_1 \times \ln(Expenditure_1) + a_2 \times \ln(Expenditure_2) + a_{12} \times \ln(Expenditure_1) \times \ln(Expenditure_2) + \varepsilon$$

Where 1 and 2 indicate goods 1 and 2 respectively, and again ε denotes the error term. An estimate of the cross substitution effect between goods 1 and 2 is under certain assumptions a function of the coefficient a_{12} and the prices and quantities of goods 1 and 2 respectively. Consumer expenditures are observed for example from household budget surveys. If the substitution between bread and cornflakes is to be estimated, a good question would be to ask for total expenditures in the last week and expenditures on bread and cornflakes respectively.

A practical problem is that if a consumer buys only bread and not cornflakes, log expenditures on cornflakes and therefore its cross product with log expenditures on bread is undefined. In this study, the problem is further aggravated by the existence of free illegal but also free legal downloading, in which case the price is zero.

Also, one cannot just ask for prices and quantities without being clear what exactly is purchased. A big pack of cornflakes naturally costs more than a small pack. The same is true for albums versus single tracks, or for films released in the last month versus films released a year ago. One needs to ask what exactly is purchased, streamed or downloaded. Respondents are likely to remember exactly what they purchased in the last week, but many internet users do not download or stream weekly, and this introduces recollection problems. Recollection problems can be solved by asking about the last purchase only, but this does not give sufficient data for a structural demand estimation.

Finally, music, audio-visual, books and computer games (media content) are not major expenditure categories. For purchases in the last week, one can ask the respondent to leave out major expenditures such as cars, furniture etc. and ask for total expenditures on daily/weekly items. In this study, total expenditure over a longer period of time is likely very high compared to expenditures on media content. This introduces the risk that the constant a_0 captures all variation in the dependent variable, total expenditure in the structural demand estimation approach.

Since there are many practical problems in estimating a structural demand equation for purchases and (free) downloading and streaming of media content, the common approach of a regression with ideally an instrumental variable and otherwise with control variables is the only meaningful approach.

2.2 Limitations of survey data and considerations

Danaher et al. (2013) mention on page 10 representativeness, inaccurate recall and obfuscation as specific challenges of user surveys. For example the results from a survey among students are difficult to extrapolate to the whole population. This study should overcome this aspect by ensuring representativeness for the internet using population as discussed in the previous chapter. With regard to the second challenge, we make sure to limit the most detailed questions (on willingness to pay) to the last download. The risk of confusion about what is lawful or unlawful is reduced by providing examples of sources and also by clearly indicating that the second category of sources are “unlawful”.

Another limitation of survey data that is more difficult to overcome is that a survey held during a short period of time does not allow a before-after comparison. Most before-after comparisons in the literature are based on time series data including a particular change at one point in time:

- Changes in the availability of content; e.g. NBC’s decision to remove its content from iTunes in 2008;
- Changes in legislation in one country compared to other countries where legislation did not change, e.g. the HADOPI becoming effective in France in 2010;
- Changes in supply, e.g. the introduction of Napster around 2000 or the shutdown of megaupload.com.

Before-after comparisons with survey data are possible if exactly the same questionnaire is sent to (possibly different) respondents before and after a major event in the availability of (illegal) content. Poort (2013)[2] held a survey before and after The Pirate Bay was blocked in the Netherlands and concluded that too many alternatives exist for downloading music and other content illegally for blocking one site to be effective, because internet users simply downloaded from other sites. However, the present study only yield one measurement in time, which implies that no before-after comparison can be made.

2.3 Estimating displacement effects

Instrumental variables

Estimating displacement rates is complicated by the fact that the respondents’ frequency or volume of file sharing is likely to be endogenous. To a large extent, file sharing is likely to be driven by the same individual characteristics that influence legal consumption: music lovers can be expected to buy more music and to download more from illegal sources. Controlling for this by using variables or proxies for ‘music loving’ could solve this problem, but possibly not entirely. Moreover, reverse causality problems may exist, if legal consumption can lead to more file sharing (a sort of reverse sampling effect) or less file sharing (Spotify subscribers stop file sharing music).

Hence, an instrumental variable approach is advised. In our analysis, we will have to look for variables/instruments that:

[2] Poort, J., J. Leenheer, J. van der Ham and C. Dumitru (2013), Baywatch: Two Approaches to Measure the Effects of Blocking The Pirate Bay, UvA working paper.

1. can vary at an individual level [for identification]
2. correlate with downloading/streaming from illegal sources [instrument relevance]
3. do not directly affect legal consumption (or more precisely, does so only through illegal consumption) [otherwise, the instrument should be in the model as a control variable]
4. are not affected by legal consumption [instrument exogeneity]

To be certain about exogeneity, it would be ideal if this instrument is 'randomly distributed' over the population or at least cannot be influenced by the individual. Such ideal instruments are, however, hard to find in practice.

To start from the second condition above, it is worthwhile to think more systematically about the determinants of an individuals' file sharing behaviour. Most generally, people will have to be a) willing and b) able to file share. We would need instruments that affect either the willingness or the ability to file share, without affecting the willingness or ability to purchase physical formats or to download or stream from legal sources.

Likely factors underlying **willingness** to download from unlawful sources:

Possibly useful	• General moral attitude with respect to certain property rights and unlawful behaviour that are unrelated to intellectual property. Its weakness is that general moral attitude is generally found to be weakly correlated to the specific moral attitude towards unlawful downloading in previous literature
Can be tried	• Enforcement level (risk of being caught and sanctions): exogenous, but hard to make a parameter for and will only vary between jurisdictions (countries)
Not useful	• Interest in content type: not useful because it also affects legal acquisition • Income: not useful because it also affects legal acquisition

Likely factors underlying **ability** to download from unlawful sources:

Possibly useful	• General internet skills: if general enough, this is exogenous, but will be a weak instrument at best and only useful for estimating displacement of physical sales. An example is the use of internet for reading news (DangNguyen, Dejean and Moreau 2012)
Can be tried	• Available broadband connection is region: exogenous, but probably weak instrument and at best only useful for displacement of physical sales of bandwidth-heavy content types: films, series and games. In regions where broadband connection is available, illegible downloading may displace offline sales. But also, it could replace home copying (via usb sticks). If available broadband is used to instrument unlawful downloading, a question about home copying should be included.
Not useful	• Availability of illegal sources: exogenous, but hard to make a parameter for and will only vary between jurisdictions if at all • Computer skills: could be endogenous. If not endogenous, it seems only to work for estimating displacement of physical sales, since there is hardly any difference in the computer skills required to download/stream from legal or illegal sources • Computer equipment & actual broadband connection: same as above: probably endogenous and even if not, only useful for displacement of physical sales

We have not identified really convincing instrumental variables for the "ease" of unlawful downloading which are independent from legal purchases of media content in our literature review discussed in Chapter 4 below. Attempts at instrumental variables estimations mostly date from the early literature, and later studies are commonly limited to estimates with sophisticated control variables and studies that use time series to establish causality.

Consultation of academic experts

An emailing was sent to 26 authors of papers on displacement rates by online copyright infringements published in 2010 or later. The following suggestions were offered by Marc Bourreau, Tobias Kretschmer, Christian Peukert, Michael Smith, Rahul Telang:

- instrument with internet penetration because this is commonly used in the literature;
- instrument with regional differences in internet speed 10 years ago and ask for download behaviour at that time
- instrument with differences in copyright enforcement between countries
- instrument with computer skills
- ask for the sequence of purchases / visits / downloads for the top 50 movies in the last year and repeat this survey two years

The first is one we consider to use, even if differences in internet speed are only sufficiently large in Poland and if they only matter for audio-visual and games and in Poland. The second suggestion was based on the consideration that high internet speeds are almost ubiquitous. But because internet penetration meets the criteria for an instrumental variable as long as there is sufficient relevant variation, we propose to try this.

We have some reservation about the third suggestion, because differences in legislation (rather than enforcement) was successfully applied to differences in *changes* in legislation but not to differences in legislation itself, e.g. Danaher et al. (2013)[3] cited in Danaher's overview study of 2013. The effect of differences in legislation or enforcement between countries are likely to be indistinguishable from general country effects. Still, at the least, this will be a useful control variable.

The fourth suggested instrumental variable has the drawback that it is not truly exogenous. The last suggestion is a novel approach but sensitive to memory imperfections. Two studies, Rob and Waldfogel (2007) and Bai and Waldfogel (2009) applied this approach to the top 50 movies, but we doubt this approach will also work for music, computer games and books. In addition, Poort has unsuccessfully tried a similar approach in the Netherlands, finding that respondents ticked off to have watched movies on TV that never had been broadcasted on TV yet.

We also asked professor Marcel Canoy (our quality assurer and econometrician) for suggestions and he suggested that social norms in one's internet community would be a helpful instrument. This suggestion has the flaw that people who frequently download from unlawful sites, may choose to be active in a community that approves of unlawful downloading, making these social norms indirectly endogenous. Nevertheless, this put us back on track on the idea of trying general moral attitudes on topics such as:

- Travelling without a fare;
- Taking a flash picture in a museum;
- Taking a pen home from school/club/work;
- Hiring a plumber informally;
- Crossing roads at red lights;

We propose to offer ten such options with the specific circumstance that no other traveller, visitor etcetera is present, and ask how often doing any of these options would be acceptable (never, sometimes or always).

[3] Danaher, B., M. Smith, R. Telang, S. Chen. Forthcoming. The Effect of Graduated Response Anti-Piracy Laws on Music Sales: Evidence from Event Study in France. Journal of Industrial Economics, Forthcoming.

Econometric implementation of instrumental variables

Since we have not completely given up the instrumental variable approach and because the statistical criteria for instrumentation will be tested once the data have been collected, we describe econometric implementation of instrumental variables below (with internet penetration as the example). The instrumental variables approach we propose to try at least, is to estimate first (with "downloads" short for "downloads and streams"):

$$Unlawful\ downloads = b_0 + b_1 \times Average\ regional\ internet\ speed + Control\ variables + \varepsilon_b$$

Where the hypothesis is that b_1 is positive and then estimate the relation (with "lawful consumption" covering both online and offline purchases and free downloads and streams provided with permission from the copyright holder):

$$Lawful\ consumption = a_0 + a_1 \times (b_0 + b_1 \times Average\ regional\ internet\ speed) + Control\ variables + \varepsilon_a$$

If unlawful downloads are well instrumented, the estimated displacement rate will be a_1. The control variables will include variables for "taste" for music, audio-visual, books and computer games respectively. The "better" this taste is controlled for (and the more uncorrelated the control variable is with the error term), the more negative we expect the coefficient of the instrument to be, to the extent that downloading from illegal sources does indeed displace legal consumption. If the control variables are perfect, the need for instrumenting unlawful downloads is more or less alleviated. A number of control variables have been used in the literature and we propose to include them all and test which works best.

This instrumental variables approach requires data on numbers of downloads and streams. In many questionnaires on illegal downloading, questions are limited to categories of time since the last purchase or download of media content, e.g. "last week", "last month", … This provides useful data to estimate ordered choice models (e.g. ordered logit or ordered probit), but testing whether the requirements for instrumental variables are satisfied becomes very circuitous with ordered choice models. For this reason, we extend the questionnaire to cover actual numbers of purchases, downloads and streams. A similar approach was adopted earlier by Bastard et al. (2012).

Numbers of purchases allow truncated regressions (e.g. tobit) or by way of approximation standard regressions (ordinary least squares), for which the instrumental variables assumptions are relatively straightforward to test, using the Wu-Hausman test for endogeneity (testing whether the instrumental variable model yields results that are significantly different from OLS/Tobit) and the Sargan test in case several candidate instruments are available to test if any of them is endogenous).

Operationalization of internet penetration

Two publications on the internet penetration were analysed, one on the quality of by SamKnows (March 2012)[4] and one on broadband scoreboards from Point-topic (2013)[5]. The study of SamKnows used data from a report of IDATE (data per December 2010).[6] The data from Point-topic are preferable because they are more recent.

[4] ec.europa.eu/digital-agenda/en/news/quality-broadband-services-eu-march-2012

[5] ec.europa.eu/digital-agenda/sites/digital-agenda/files/DAE%20SCOREBOARD%202013%20-%202-BROADBAND%20MARKETS%20.pdf, ec.europa.eu/digital-agenda/sites/digital-agenda/files/scoreboard_broadband_markets.pdf

[6] ec.europa.eu/digital-agenda/sites/digital-agenda/files/broadband_coverage_2010.pdf

Internet penetration rates are presented per country in the scoreboard data of Point-topic by the breakdown into rural and urban areas, based on the NUTS-3 classification of regions by Eurostat and the classification of these regions into rural, semi-rural and urban.

The region in which the respondents live, will be based on the postal codes of their home address. The postal codes are linked to regions via national postal code tables linking these codes to the national equivalent of the NUTS-3 regions:

- France - 95 départements (excluding DOM)
- Germany – 429 Kreise
- Poland - 65 Podregiony
- Spain - 56 provincias + islas (excluding Ceuta en Melilla)
- Sweden - 21 Län
- United Kingdom - 139 unitary authorities or districts

At the least, we will classify these regions into rural, semi-rural and urban according to the Eurostat classification, and check whether instrumenting with the internet penetration (if this variable meets the statistical criteria for instrumentation) according to whether the region of the respondent was rural or urban yields the same estimate of displacement rates for respondents in different broad areas of the country (e.g. north and south or east and west). But preferably, we use the internet penetration in the specific region of the respondent to have more variation in the internet penetration variable, and we hope that Point-topic will provide the internet penetration per NUTS-3 region.

Fall-back: control variables

If the requirements for an instrumental variables are not met, the fall-back option is to estimate an equation with control variables for "taste" for media content. The equation to be estimated then becomes:

$$Lawful\ consumption = a_0 + a_1 \times Unlawful\ downloads + Control\ variables + \varepsilon$$

If the control variables work well, the estimated displacement rate of lawful consumption is again a_1. The above model can be estimated with a truncated regression model (tobit), again after testing which control variables for "taste" for media content work best, as well as average regional internet speed to capture one aspect of ease of illegal downloading which is likely not correlated with the error term. We expect that the better the control variables are, the more negative the coefficient of unlawful downloads is, to the extent that downloading from unlawful sources does indeed displace legal consumption. The survey will generate a lot of data to test varying model specifications. Also, the number of respondents is likely sufficient to test for specific effects of for example free lawful supply of streams and downloads on purchases – they are included in the dependent variable in the base model. But since free lawful supply generates no sales, they might be included among independent variables as well if one seeks to analyse the displacement of sales.

Displacement of sales

The above model estimations provide the substitution rates in terms of quantities. In theory, one can estimate displacement of sales by weighting the displaced quantities with average prices. Implicit in the estimated displacement rates, is that purchases at the going prices are displaced by unlawful downloads. Thus, the displacement of sales (in millions of euros) can be estimated as follows:

Displaced sales = (Number of unlawful downloads) x (Displacement rate) x (Market price).

This approach is adopted for example in the PWC study cited above. One thing one needs to control for, is that unlawfully downloaded content can be different from lawfully downloaded content. If films are downloaded lawfully shortly after their release at premium prices and films are downloaded unlawfully later, when market prices have dropped, the lower prices should be applied. Of course, the premium prices need to be applied if most films are downloaded unlawfully shortly after the release.

Nevertheless, this approach does not tell the whole story because people who have downloaded unlawfully may be willing to pay for content but only for lower than going prices. Therefore, questions about the price one is willing to pay for downloads or streams need to be included to estimate the willingness to pay.

2.4 Estimating willingness to pay

The method to estimate willingness to pay is based on the study of Schlereth et al.[7] discussed further in Chapter 4. It consists of offering respondents choices to access content with varying attributes at certain price ranges (so-called "preference classes") with the question to indicate the likelihood to pay for the content on a Likert scale from never/very unlikely to always/very likely (so-called "scale classes"). The resulting survey data can be used to estimate a "scale-adjusted latent class" (SALC) model. This model consists of a likelihood function which is a generalization of the multinomial logit model, with:

- variables that explain the probability of a scale of likelihood (some respondents may be less likely to respondent "very" likely or unlikely regardless of the question) and
- variables that explain the probability of preferences (young persons may have different preferences than older persons, perhaps).

[7] Schlereth et al. (2012), 'Using discrete choice experiments to estimate willingness to pay intervals', Marketing Letters 23(3), 761-776

3 Interview preparations

Ecorys will interview national authorities (or copyright collecting organisations) and content providers to obtain input for developing the questionnaires and to enrich our analysis to estimate displacement rates. We focus on these two types of stakeholders for two reasons:

- *to learn more from national authorities about copyright regulation, enforcement and policy alternatives in order to be able to assess the impact of regulations on consumer behaviour and internet piracy.*
- *to learn more from content providers about price ranges, distribution channels and private anti-piracy policies.*

These interviews will be held in the six countries of the study: France, Germany, Poland, Spain, Sweden and the United Kingdom.

3.1 Identification of relevant law

We identified for each of the 6 countries the main law on copyright. These laws will be analysed by Ecorys. Moreover, we have asked the national authorities to identify any other important copyright laws as well as to describe the main issues presented in those laws.

The table below presents the main laws that we identified:

Country	*Regulation*	*Reference*
Germany	Gesetz über Urheberrecht und verwandte Schutzrechte (UrhG)	"Urheberrechtsgesetz vom 9. September 1965 (BGBl. I S. 1273), das durch Artikel 1 des Gesetzes vom 1. Oktober 2013 (BGBl. I S. 3728) geändert worden ist" Stand: Zuletzt geändert durch Art. 8 G v. 1.10.2013 I 3714"
Spain	Ley de derecho de autor	LEY FEDERAL DEL DERECHO DE AUTOR Nueva Ley publicada en el Diario Oficial de la Federación el 24 de diciembre de 1996 TEXTO VIGENTE Última reforma publicada DOF 10-06-2013
France	HADOPI law	LOI n° 2009-669 du 12 juin 2009 favorisant la diffusion et la protection de la création sur internet
Poland	Prawie autorskim i prawach pokrewnych (Act on Copyright)	Dz.U. 1994 Nr 24 poz. 83
UK	Digital Economy Act 2010	Digital Economy Act 2010 (c. 24)
Sweden	Lag (1960:729) om upphovsrätt till litterära och konstnärliga verk	Lag (1960:729) Modified: *2013:691*

3.2 Development of topic lists

We developed two distinct topic lists for the interviews (1) on national regulation and enforcement for the national authorities (2) on the range of media sales and realistic price ranges for the content providers. These topic lists are already reviewed by the European Commission. Ecorys revised the

lists based on the comments of the European Commission.

Topic list national authorities

A cross-country study, like the Ecorys study, offers the opportunity to assess the impact of regulations on consumer behaviour and internet piracy. In order to take differences in regulations into account, we need to map the regulations of each of the six countries. Through interviews with national authorities, we seek to identify variation in the regulation. Therefore we focus the interviews with national authorities on the following topics:

- Main relevant national regulations
- Key elements of relevant national regulations (what is considered to be (il)legal)
- Available actions to combat internet piracy
- Possibilities to start a civil procedure against infringement
- Ways of enforcement
- Main difficulties faces in enforcement
- Legal and non-legal actions that have taken place
- Main developments that require new legislation
- Possible flaws in current regulation

Interviews with content providers

We need information from content providers on realistic price ranges and the whole range of media sales as input for the survey questionnaire. Therefore we focus the interviews on the following topics:

Interview topics for content providers:

- Available international and country specific media distribution channels (and the characteristics of those)
- Main price and product categories used in the branch and shares of sales amongst those
- Price ranges per price/product category
- Actions taken by content providers to protect copyright content
- Impact of reduced piracy on prices/ quality and diversity of copyrighted content
- Position towards current legislation
- Possible improvements in legislation

The topic lists are presented in annex 7.

3.3 Identification of contact persons

National authorities and copyright collecting organisations:

For interviews about legal aspects and enforcement, the Commission identified a number of contact persons at ministries which they shared with Ecorys. Ecorys contacted the European umbrella organisation of copyright collecting organisations (CISAC), which provided the contact data of the national organisations of the six countries.

For each of the 6 countries we have invited a contact person at the national authority as well as a contact person at the national copyright collecting organisation for an interview. Ecorys offered them the choice between a phone interview, filling in the questionnaire and a follow-up call, or a visit to their location.

Content providers

Music:

(1) *Record companies:* there are five "big" international record companies in the world, all with headquarters outside Europe, including the British company EMI which was acquired by Universal Music Group in 2012. We contacted two European offices of them.

(2) *Record labels:* they are interesting because they are likely to have the best market information on live concerts. They are mostly national organisations. Ecorys contacted the European umbrella organisations for record labels (IMPALA) to ask for personal contact data of national companies. We chose this approach because people are more likely to cooperate if they are asked personally to do so in stead of via a general email address. Moreover we are now certain that we contacted people who are informed on the subject. IMPALA provided many contact details, we invited those contact persons.

Audio-visual:

(1) *Producer representatives:* Ecorys identified a list of national film producer representatives of all European countries (including personal contact data). For each of the countries included in our study, we invited up to 4 representatives (at least 1 per country). We asked them to either provide information for their country, or to suggest contact persons of producer companies.

(2) *Cinemas:* we invited 2 cinemas to participate in the study.

(3) *Pay-tv:* we invited HBO to participate in the study.

(4) *Producers:* we invited 5 producers to fill out our questionnaire.

Video games:

It turned out that almost all the major video game developers and distributors are located in the USA and Japan. Ecorys invited the European umbrella organisation of video game producers and the umbrella organisation of video game distributors, as well as three game developers.

(1) *Umbrella organisations*: The European Games Developer Federation and Europe Distribution

(2) *Game developers:* two European games developers and Blizzard (based in USA) were invited to participate in the study.

Books

We contacted the Publishers Association Limited. They provided us personal contact details of 5 publishers. Also, we asked them to fill out the survey themselves.

These above mentioned content providers were asked to fill in the questionnaire and return it to Ecorys.

In the annex we provide a list of all organisations of all content types that we contacted.

3.4 Response so far

Interviews that are already finalised:

Type of content	Country	Organisation	Type of organisation
Music (5)	Germany	K7	Record label
	Germany	CitySlang	Record label
	Spain	Everlasting Records	Record label

Type of content	Country	Organisation	Type of organisation
	Sweden	Playground Music	Record label
	United Kingdom	Beggars	Record label
Audio-visual (0)			
Games (0)			
Books (1)	United Kingdom	The Publishers	Publisher

From the games industry, we have received one response from the European Games Developer Federation giving a detailed explanation how new business models are being developed based on free (online) games, with options to pay for extra items or extra levels, making the risk of illegal downloading irrelevant.

From the films industry we have received one response from the Polish national film producer representative body, who have committed to complete the questionnaire within the next week.

4 Literature research

4.1 Literature covered

Two types of econometric literature have been reviewed:

- Studies estimating displacement rates of copyrighted content by online infringements;
- Studies estimating overall effect of online copyright infringement on the music, games, movies and book industries.
- Willingness to pay studies.
- Studies using a survey to explore underlying motives for online piracy;
- The studies reviewed include those suggested by the Commission, those listed in the bibliography of recent overview studies. We have not restricted the literature to peer-reviewed papers, because other papers may offer novel ideas as well.

4.2 Main findings – displacement rates

A total of 62 papers has been reviewed, however 10 of these were not further used after a first reading, for example because the results were based on a very small sample size. Most of the remaining 52 studies aim to quantify the displacement rate of legal purchases due to illegal copying, however some studies with another focus have been included in the review if they applied a methodology or approach that could be useful to improve our own methodology. The reviewed papers can be roughly divided in those based on a survey (23), evaluating a time series (18) or making a cross country or cross region comparison (5). The main findings of the papers will be shortly discussed according to this division. It should be noted that some papers apply multiple strategies.

Survey-based studies

The conducted surveys can be roughly divided in those performed in writing (offline) and those sent to participants online. A majority of the offline surveys involved students, with a sample size ranging between 160 and 2,000 respondents. A notable exception is the research of Makonnen et al. (2009), which employed 14 semi-structured interviews. Some online surveys were sent to personal e-mail addresses of University students, but most of the online surveys were conducted with the use of pre-existing panels. These online panel surveys had on average a much higher number of respondents, approximately ranging between 700 up to 10,000. With the exception of Makonnen et al. (2009), all surveys yielded significant results.

Due to the illegal nature of file sharing respondents might be reluctant to give honest answers on their downloading behaviour. Therefore, how survey questions on illegal downloading are worded in the reviewed studies is of interest. Only two surveys used words such as illegal and piracy, the others avoided any terms that might have a negative connotation. Instead most surveys used the term free downloading. Furthermore practically every survey ensured respondents that their reply would be treated confidentially and anonymous. In one paper (Huygen et al., 2009) the questionnaire was introduced to respondents as dealing with consumers feelings about music, films and games. This particular survey started with a series of general questions about music preferences, listening behaviour and purchasing behaviour and only then touching on file sharing.

Most of the survey based studies took into account variables on the respondents, two papers however perform a regression analysis using characteristics of downloaded albums and songs and

one paper includes the characteristics of downloaded movies as control variables. These variables include gender of artist, position in the charts, genre, availability in China (Bai & Waldfogel, 2009) and whether it is released by a major or minor label. The variables for movies used are number of screens on which a movie was released (a proxy for the studio's marketing efforts); attendance in German theatres (a proxy for word of mouth); average user rating on the Internet Movie Database (IMDb; a proxy for the valence of word of mouth) (Henning-Thurau et al., 2007).

Those studies that used respondent specific variables often included the following control variables: gender, age, occupation, family income, race, broadband access and in case of students major. One French study included the size of a city someone is living in, as a proxy for access to live music (Dang Nguyen et al., 2012). Poort & Rutten (2011) and Andersen & Frenz (2010) both ask questions about the reason for buying or pirating music. Andersen & Frenz (2010), first asked for the total number of downloads after which the respondents were presented with four motives for downloading ('album too expensive', 'hear before buying', 'not available elsewhere', and 'do not want the whole album'). Respondents had to indicate which portion of their total downloads they associated with each of these four motives. Poort & Rutten (2011) asked their respondents a yes/no question whether they used file-sharing to discover new genres, actors, bands, games or to make social contacts.

Various studies use time spent on the internet or ability to navigate on the internet/download as a proxy for internet skills, though as a control variable rather than an instrumental variable, e.g. Bouni et al. (2005).

Other variables are based to indicate the attitude towards unlawful downloading, for example through the use of scenarios (Lysonski & Durvarsula 2008); or by asking whether respondents believe that downloading reduces chances of success for upcoming artists (Lysonski & Durvarsula 2008). The four scenarios presented by Lysonsli & Durvarsula (2008) are:

1. Stealing a CD from a music store with 100 percent certainty of not getting caught;
2. Stealing a CD from a music store with some risk that an invisible security camera observes you
3. Not paying for downloading music from a new CD from a major successful artist who you believe is very rich because of two previous successful CDs
4. Not paying for downloading music from a new CD from an independent artist who is very artistic but has not made much money on his/ her previous CD

For each scenario the respondents had to indicate what would do and what they expected their peers to do. Chiang & Asana (2009) asked if piracy is unfair and whether P2P sites should be shut down.

The majority of the 23 papers using a survey are focussing on music content, namely 14. Of these 14 publications 1 compares the effects of piracy on video games to music (Bastard et al., 2012), while another (Huygen et al., 2007) makes the comparison with copyright content in films. 4 papers focussed exclusively on movies and only one took only video games into account.

The academic debate whether file sharing even reduces or increases legal demand for music is not settled. Although an increase appears to be counterintuitive it might be achieved through so called ' sampling' or 'exploring', were consumers use downloading to sample song from a particular album or artist before purchasing the music legally. Although various surveys found some evidence of sampling (3 out of 14), the net result of file sharing on music sales is considered negative in most papers (6 studies found a negative effect on purchases and only 1 discerned a positive effect). If the studies are restricted to peer-reviewed papers, only those with negative or insignificant estimated displacement rates remain.

Survey based results - Music

The reported displacement rate per downloaded album or song ranges between 0.04% (Maloney, 2012) up to 30% (Zentner, 2006). Rob & Waldfogel (2007) explained that even for individuals displacement rates can be between 0 and 1 (but not exactly 0 or 1), depending on whether the price of a lawful download is above or below his willingness to pay. One study found a positive effect of file sharing on legal purchases of 0.44 CD per downloaded content. This positive result was attributed to sampling (Andersen & Frenz, 2007). However, Barker & Maloney (2012) criticized this paper for fundamental weaknesses in the estimation models. Analysing the same data with different models, they find a significantly negative effect.

The practice of streaming (where consumers do not acquire the music permanently, but can access it online), was found to have no significant effect on CD purchases, but is a complement to buying music online and live music attendance (Dang Nguyen et al., 2012). Dang Nguyen et al. (2012), applies the frequency with which people use online news sources as an instrumental variable for their overall internet usage.

Survey based results - Audio-visual

From the 5 survey based papers on the effect of file sharing on the purchases of movies that we analysed, 1 found a positive effect (Bouni et al., 2005) while the other 4 report a negative effect. Bouni et al. (2005) asked respondents whether illegal downloading increased their demand for legal movie purchases, furthermore the frequency of downloading and purchasing movies legally had to be filled in. The effect on cinema visits is considered by 3 papers. One paper concluded a positive effect, one a negative effect and the third discerned no effect. These three papers determine legal and illegal consumption by presenting respondents with a list of movies and ask whether these were consumed paid or unpaid, how often and in which order. One of the papers (Rob & Waldfogel, 2007) compared the movie industry with the music industry and concluded that while the overall loss due to downloading is larger for music, the displacement rate is much higher (close to one) for movies. This high displacement rate for movies was explained by referring to the longer downloading time and searching effort for movies, which results in downloads by people who really want to see a particular movie, the lower overall losses in movie sales are explained by the lower number of downloads.

Survey based results - Audio-visual

Only two surveys included video-games. Interestingly one of these surveys (Bastard et al., 2012) ask for the digital and physical consumption of several types of cultural goods in the last 12 months (CDs, DVD, Games, etc.). If respondents indicate that the acquired digital goods it was asked whether this was done legally or not. Bastard et al. (2012) state that piracy affects the music industry negatively while the effect on video game purchases is positive (Bastard et al., 2012). Bastard et al. (2012) state that the cause for this difference is probably vertical product differentiation in the video game industry, since hacking a video game does not allow access to the same practices as buying a game legally. The other survey focused on video games (Fukugawa 2011). He asked respondents ask how familiar they are with downloading games and whether they actually do this. Fukugawa (2011) did not find a negative effect of downloading on games sales, and noted that although approximately 40% of surveyed users know how to download and play pirated videogames for free, most of them do not actually download pirated versions. Fukugawa (2011) also applies ownership of game playing devices as a control variable for interest in games.

Like most of the surveys applied in the reviewed literature, in our own survey we will guarantee full anonymity of respondents and a reporting of nationwide results only. Furthermore the term illegal will be avoided and replaced with unlawful. Although this new term still has some negative

connotation, the alternative used in most studies, ´free downloading´ might result in an overstatement of the illegal category. Since people might confuse free streaming and legal downloads, with illegal free downloading. An instrumental variable that will be adopted from Dang Nguyen et al. (2012) is the frequency of using online news sources as a proxy for online activity. Control variables from previous surveys that will be included are interest in music compared to peers, genre of music last downloaded or streamed and ownership of several devices for playing games, watching movies, listening music or reading e-books.

Studies based on time series analysis

From the 18 papers that apply a time series method, one includes a questionnaire. Although some papers just compare sales versus downloads over a given period, most reviewed studies involve a sudden event, such as the shutdown of popular file sharing website Megaupload, the introduction of stricter regulation or the removal of NBC content from iTunes.

Of the reviewed studies 10 aim to quantify the effect of file sharing on sales. Two out of this 10 studies find a positive effect, one mentions that the effect is significant but very small (0.02% more purchases due to one click on a P2P site), streaming has a slightly more pronounced effect of 0.07% (Aguiar & Martens, 2013). A paper of Peukert et al. (2013), reports mixed effects of file sharing on album survival in the charts, positive for popular and female artists while negative for others. From the 8 surveys that report a negative effect, one reports only a very small effect (0,1%), another study (Adermon & Liang, 2010) mentions that although music sales are negatively affected, movie sales is not. One study from Danahar et al. (2010) does not look at the effects of piracy on legal purchases, but rather at the effect of legal downloading on physical sales, they conclude that legal downloading reduces piracy, but hardly competes with physical sales. An interesting approach is applied by Goel et al. (2009), this study compares stock prices of media companies before and after the introduction of stricter regulation under the Pirate Act in the US and observe a rise in stock prices of several media stocks.

Control variables that are often applied in the time series studies are among others: birth year; gender; class and major of students; occupation; overall online activity; household income; household size; presence of children in the household and region of residence.

Based on the results of Danaher et al. (2010) it becomes clear that a division in our survey between online and offline legal purchases is relevant, the same holds true for free downloading versus streaming. Hours of internet access per week will be used as an instrumental variable for internet familiarity and hence ease of downloading. Asking respondents how often they use internet for a list of several purposes will be used to mimic the ´clicks on content information sites´ applied by Aguiar & Martens (2013) as an control variable for content taste. Education level rendered relevant result is a control variable in al time series studies reviewed and will therefore be included in our questionnaire.

Studies based on cross country and cross region analysis

A cross country or region method was applied by only 5 of the reviewed studies, although several time series and surveys based papers also took country specific effects into account. From these 5 studies 3 found a negative effect of file sharing on music sales, while the other two mention that there is no net effect. All 3 studies that discerned a negative effect mention that this explains the drop in legal sales only partially, ranging from a 2% revenue drop for the music industry (Peitz & Waelbroeck, 2006) up to a 6,6% decline (Hui & PnG, 2001). One of the studies that mentioned no net effect, stated that the positive sampling effect and the negative piracy effect cancel each other out (Andersen & Frenz, 2010).

All five studies apply GDP as proxy for economic environment other used variables are: percentage of downloading adults; broadband access; CD players per household; Number of purchased DVDs/video games/ movie tickets/ live concerts; average price of legal content and expected penalties for illegal downloading. Two studies use the annual number of cassettes sold divided by the number of CDs sold as a measure for the technological phase a country is in.

Our own research will include the average internet speed per region as a proxy for "affordable internet speed". Which will be tested as a quite exogenous variable that eases (illegal) downloading.

4.3 Main findings - willingness to pay

Five studies on willingness to pay have been reviewed, and the insights of four have been used to develop the questionnaire. We searched for one overview study comparing different methods to estimate willingness to pay and discussing the pros and cons of each method, two recent studies to make certain what is the current state of the art and as many useful studies that apply willingness to pay estimates to online media content. This search resulted in the following studies:

Table 4.1 Overview of willingness to pay studies.

Type of study	Study
Overview study	Breidert et al. (2006), 'A review of methods for measuring willingness-to-pay', Innovative Marketing, vol.2, issue 4, 8-32
State of the art	Schlereth et al. (2012), 'Using discrete choice experiments to estimate willingness to pay intervals', Marketing Letters 23(3), 761-776
	Dost, F. and R. Wilken (2012), 'Measuring willingness to pay as a price range: When should we care?', International Journal of Research in Marketing, 29(2), 148-166
Application to online media content	Sinha et al. (2010), 'Don't think twice, It's alright: Music piracy and pricing in a DRM-free environment', Journal of Marketing, vol. 74, 40-54.

The study which caught our attention but which we did not use in the end was De Pelsmacker et al. (2005)[8], who applied a conjoint analysis. Since the Breidert study overall argues against a (pure) conjoint analysis and the two recent state-of-the-art studies use a discrete choice approach, we decided against the approach of a conjoint analysis. But in the end, the difference between a conjoint analysis and a discrete choice model practically vanishes if discrete choices are offered sequentially for products with different attributes, as is the case in state-of-the-art studies.

Breidert et.al (2006) have reviewed willingness to pay studies, which they classify into studies of market data, experiments, direct and indirect surveys. In direct surveys respondents are asked directly about their willingness to pay (at which price?) and in indirect surveys they are asked whether they would buy a given product at a given price. Breidert et al. argue that the main drawback of direct questions is that it usually is not exactly clear for which product the willingness to pay is measured because the exact product is not described, limiting the validity of the measurement.

Measurements of willingness to pay based on indirect surveys fall in one of two classes: discrete choice or conjoint. A drawback of a pure conjoint analysis is that actual purchase behaviour is not

[8] De Pelsmacker, P., L. Driessen and G. Rayp (2005), Do Consumers Care about Ethics? Willingness to pay for Fair-Trade Coffee, The Journal of Consumer Affairs, 39(2), pp. 363-385.

observed at all. For this reason we center the willingness to pay questions around the last download or stream.

Sinha et al. (2010) asks respondent about their willingness to pay with a sequence of two bids, with and without DRM (Digital Rights Management). DRM enables online content providers to make it difficult or impossible for end users to copy the content, for example making it impossible to store the content physically on the PC or tablet. Respondents are asked whether they would purchase a music track at one of five random point prices for accessing music with DRM (yes or no), and then for music with DRM removed, at a price based on the first answer.

Two recent papers on willingness to pay, Schlereth et al. (2012) and Dost and Wilken (2012) argue that asking to indicate the likelihood of buying a certain good on a Likert scale, from “unlikely” to “likely” reflects consumer choices best. In addition, both papers argue that such questions with a price range rather than a point price are more likely to capture the price range in which consumers are willing to pay for a good. Schlereth et al. finally argue that an “attractiveness indicator” is needed to capture a higher willingness to pay for a product with more attractive attributes. In this view, the study of Sinha et al. is state-of-the-art in capturing the willingness to pay for a more attractive alternative, but willingness to pay may perhaps be measured even more accurately with a Likert scale of likelihoods instead of yes or no and with price ranges instead of point prices.

Schlereth et al. applied their model to an online survey with 122 completed questionnaires. They first ask respondents about their familiarity with netbooks and their likelihood to buy a netbook in the next twelve months. They then continue with a discrete choice experiment concluding with the question to rate the difficulty to make the choices, and finally ask after age and gender to use as explanatory variables (co-variates), with age turning out a relevant control variable but not gender.

5 Development of Questionnaire

5.1 Question blocks

After reviewing the literature and considering which data would be ideal to estimate displacement rates, we concluded that more questions are needed to estimate displacement effects than anticipated. At the same time, the impact of legislation and of streaming were clarified during the kick-off meeting as factors to take account of, but not as additional research questions.

To reduce the length of the questionnaire, we limited the number of question blocks, now consisting of:

1. Internet behaviour and "taste for content";
2. Numbers of purchases, downloads and streams;
3. Questions about the last download or stream;
4. A final question on level of education.

The question blocks are arranged in this order to minimize the risk of nonresponse. For this reason, the question about level of education is moved to the end of the survey, as it could be sensitive. In the second and third block, the questions are designed to conduct the respondent to increasingly detailed questions about increasingly recent purchases, downloads and/or streams.

In block 2, the questions start with when the last purchase, download or stream took place. The respondent is then asked about numbers of purchases, downloads and streams in the last year for those content types for which the last transaction took place longer than 3 months ago. Block 2 ends with questions about numbers of purchases, downloads and streams in the last 3 months when the last transaction took place in that period.

Block 3 then continues with questions around the last transaction.

5.2 Rationale behind questions and their use in previous literature

First block: control variables

The first block of the questionnaire mainly covers questions that have been used in the literature. One type of variable has been used to instrument illegal downloading is the ease, speed or familiarity of internet use. The speed of internet needs to be the maximum available speed in the region where the respondent lives to be potentially used as an instrumental variable, because individual internet speed is likely to be higher for persons who frequently download media content (lawfully and unlawfully), whereas the maximum available internet speed is not related to individual preferences. As discussed earlier, high speed internet is available nearly universally in the west of Europe, but still it looks worthwhile to try this potential instrument for Poland. A number of other studies ask after the frequency of using internet in general, but then rather as a control variable. DangNguyen, Dejean and Moreau (2012)[9] use more precisely the frequency of using internet to read news as an instrumental variable for general use of internet which is unrelated to accessing music or audio-visual content. We propose to include all three questions in the questionnaire in order to make comparisons with results from previous literature.

[9] DangNguyen, Dejean, & Moreau, 2012, Are Streaming and Other Music Consumption Modes Substitutes or Complements?, Working paper, March 2012. Available @ http://ssrn.com/abstract=2025071

From our (Poort's) previous empirical experience, we know it is very important to have unambiguous and more or less exogenous control variables for taste, and here again we propose more than one potential control variable to choose which works best. To control for "taste" for content, three types of questions are commonly asked in previous literature:

- to rate one's average in content to that of the "average" person, e.g. in Poort and Rutten (2011);
- the use of internet to search general information on music, films etcetera without necessarily an intent to purchase, e.g. Aguiar and Martens (2013) ;
- ownership of devices.

Ownership of devices is not directly (unambiguously) related to "taste" for content and was criticized by Rob and Waldfogel (2007) so we suggest to leave this out from the questionnaire.

Second block: consumption of media content

In the second block we ask first for the last time different types of media content were purchases, downloaded or streamed. This type of questions has proven to be relatively easy to respond on. Ideally however, we like to use more precise information about actual numbers of purchases, downloads and streams, which should yield better information. To reduce the risk of recollection problems, we ask those respondents who purchased, downloaded or streamed a certain type of content in the last three months for numbers in that period, and to ask for numbers in the last year otherwise. The combination of asking after time since last download and numbers of downloads has been used previously by Bastard et al. (2012).

Third block: last download

Questions about willingness to pay is centered around the last download or stream, to make certain exactly what type of content has been accessed, for example an album or a single track for music. The reason is that the price range or the willingness to pay may be different depending on such and other attributes.

Until sufficient numbers of respondents are covered for e-books and computer games, respondents who have downloaded or streamed content in those categories are asked about their last online transaction in that specific category. Once sufficient numbers of respondents in those categories are covered, the respondent is asked about their last online transaction across all content categories.

In state-of-the-art willingness to pay literature, respondents are offered a number of choices between products with different attributes and the choice whether they would buy the product within a certain price range (or at a certain point price). This raises the question what attributes are relevant for downloads or streams of music, films, tv, e-books and computer games. We have considered a number of alternatives:

- DRM (Digital Rights Management). DRM makes it difficult or impossible to copy content and this attribute is used by Sinha (2010).
- Download speed.
- The presence of advertisements.
- The availability of content.

For all four characteristics, unlawful sources may offer better usability or quality at no price than lawful sources. The relevant question for willingness to pay would then be if the respondent is willing to pay for the content if only the legal sources did not have DRM, low bitrates or compression rates, few content or advertisements.

Sites that compare download or streaming platforms typically indicate whether the platform is ad-free and the availability of content (e.g., number of music tracks) so we propose to use the latter two. The drawback of download speed is that all major sites offer high download speeds, and the drawback of DRM is that this technology is not (yet) common.

In behavioural economics, it is common practice to conclude a series of choice questions with a wrap-up question to rate the difficulty to make those choices, as an explanatory variable that flags the reliability of the answers.

Fourth block: question about educational level

Potentially identifying questions about age, gender and educational level are generally reserved for the end, because they are sensitive and risk non-response. Age, gender and region of residence are known for all panel members, hence the fourth block is limited to a question about educational level, which is known for most panel members but not for all, and may also change over time.

5.3 Examples of sources

To clarify the distinction between lawful and unlawful sources in the questionnaire, examples will be used for lawful and unlawful sources. The two tables below show the most frequently used sources for unlawful downloading and unlawful streaming of music respectively.

Table 5.1 Top 20 most clicked-on sites offering music downloads without the permission of copyright holders, per country

	France	Germany	Spain	UK
1	Megaupload.com	Canna Power	Megaupload.com	isoHunt
2	Torrent411.com	RapidShare	RapidShare	Btjunkie.org
3	Dilandau	Torrent.to	Dilandau	Torrentz
4	iMesh	Megaupload.com	EliteTorrent	BearShare
5	Btjunkie.org	iMesh	VidToMP3	Kick Ass Torrents
6	search-torrent.com	Tube2mp3.de	iMesh	Demonoid.me
7	Torrentz	YaBeat	Mejor Torrent	iMesh
8	RapidShare	SharePlace.com	Lokotorrents.com	YouTube mp3
9	Emule-box.com	SockShare	Puntotorrent.com	Megaupload.com
10	isoHunt	BearShare	Torrentz	SockShare
11	Kick Ass Torrents	ZippyShare	bitshare.com	ExtraTorrent.com
12	YouTube mp3	isoHunt	Contorrent.com	VidToMP3
13	MultiUpload	Convert2mp3.net	MP3XD	BeeMp3
14	Omg Torrent	Mp3-kostenlos-downloaden.de	MultiUpload	RapidShare
15	Cliptomp3	Ddl-music	Taringa Mp3	Mp3Skull
16	ZippyShare	bitshare.com	muchoMP3.net	Mp3Raid.com
17	Mininova.org	YouTube mp3	ZippyShare	torrenty.org
18	4Megaupload.com	MultiUpload	Wupload	ZippyShare
19	BearShare	Rnb4u.in	Kick Ass Torrents	Torrent Day
20	BeeMp3	MzHipHop.com	Por Megaupload.com	TorrentReactor

Source: data provided by Aguiar and Martens based on the Clickstream 2013 data.

Table 5.2 Top 20 most clicked-on sites offering music streams without the permission of copyright holders, per country

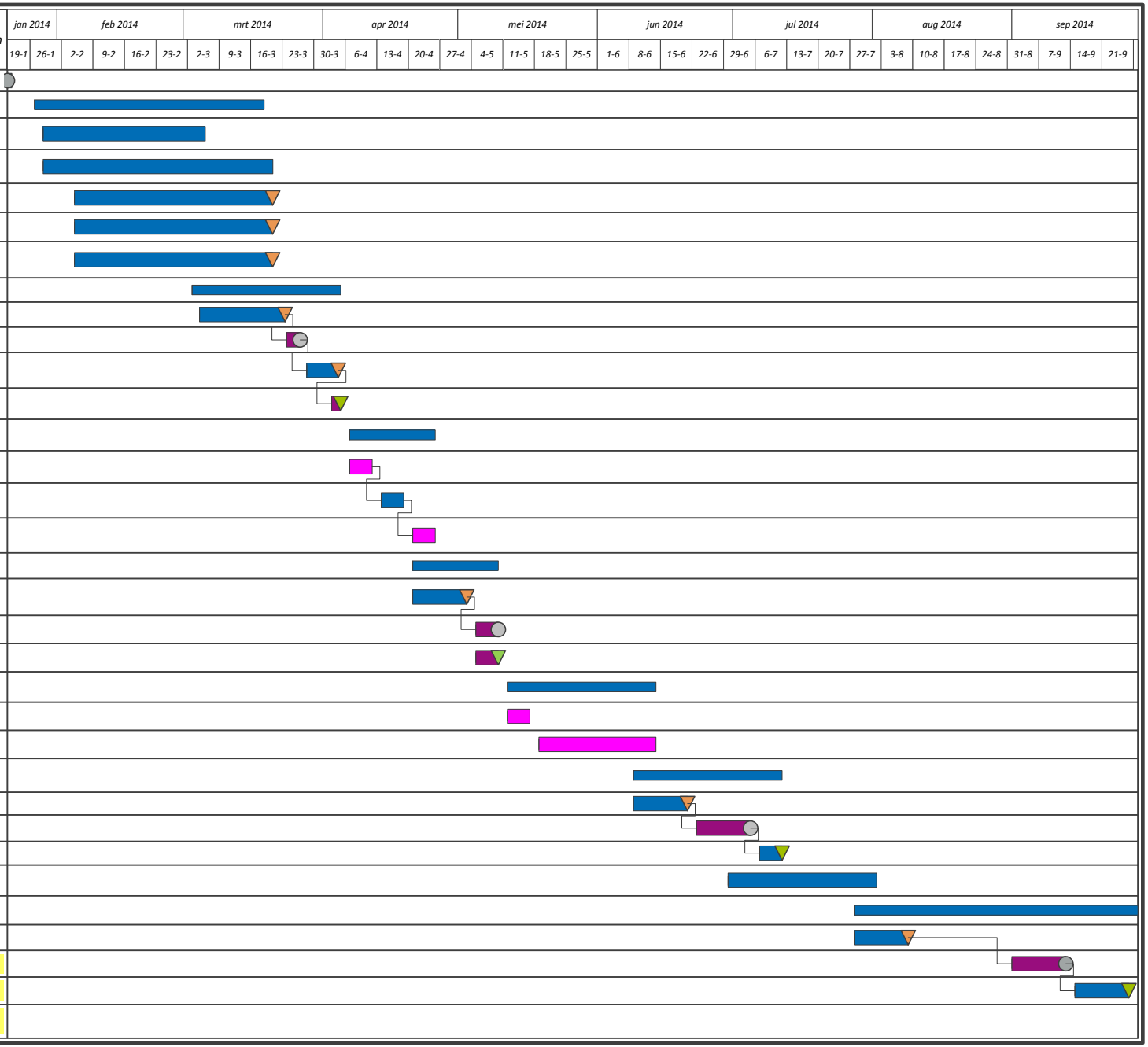
	France	Germany	Spain	UK
1	Hypster.com	Jukebox-heroes-radio.de	FullTono.COM	Hypster.com
2	Musicplayon	Hypster.com	NOSEQ.COM	Musicindiaonline
3	NOSEQ.COM	Musicplayon	Enladisco.com	Musicplayon
4	Buenamusicagratis.com	NOSEQ.COM	SonicoMusica	NOSEQ.COM
5	FullTono.COM	SonicoMusica	Buenamusicagratis.com	SonicoMusica
6	Musica4All	Musicindiaonline	Hypster.com	Ascoltare Musica
7	SonicoMusica	FullTono.COM	MusicaTono.com	---
8	Ascoltare Musica	---	Musica4All	---
9	---	---	Musicplayon	---
10	---	---	Musicindiaonline	---
11-20	---	---	---	---

Source: data provided by Aguiar and Martens based on the Clickstream 2013 data.

--- Means: no further sites offering illegal music streams are clicked on by the sample of roughly 5,000 panel members of the Clickstream data.

6 Detailed planning of the work

ID	Task Name	Start	Finish	Duration
1	Kick-off meeting	21-1-2014	21-1-2014	1d
2	**Phase 1a – Desk Research**	**27-1-2014**	**18-3-2014**	**37d**
3	Econometric literature + statistics	27-1-2014	3-3-2014	26d
4	Questionnaire / interviews with authorities and content providers	27-1-2014	18-3-2014	37d
5	Develop econometric model	3-2-2014	18-3-2014	32d
6	Develop instrumental variables	3-2-2014	18-3-2014	32d
7	Develop questionnaire (adults & minors)	3-2-2014	18-3-2014	32d
8	**Progress Check 1a**	**3-3-2014**	**4-4-2014**	**25d**
9	First progress report	3-3-2014	21-3-2014	15d
10	EC review + meeting	24-3-2014	26-3-2014	3d
11	Draft final model, IV & questionnaires (adults & minors)	27-3-2014	2-4-2014	5d
12	EC approval of questionnaires (adults & minors)	3-4-2014	4-4-2014	2d
13	**Phase 1b – Programming & Soft Launch**	**7-4-2014**	**25-4-2014**	**15d**
14	Program questionnaires: adults & minors (English only)	7-4-2014	11-4-2014	5d
15	Pilot questionnaires prior to soft launch	14-4-2014	18-4-2014	5d
16	Soft launch: adults & minors (English only)	21-4-2014	25-4-2014	5d
17	**Progress Check 1b**	**21-4-2014**	**9-5-2014**	**15d**
18	Second progress report + adjusted questionnaires based on soft launch	21-4-2014	2-5-2014	10d
19	EC review of progress report + meeting	5-5-2014	9-5-2014	5d
20	EC approval of final questionnaires	5-5-2014	9-5-2014	5d
21	**Phase 2 – Questionnaire Launch & Monitoring**	**12-5-2014**	**13-6-2014**	**25d**
22	Translation of questionnaires	12-5-2014	16-5-2014	5d
23	Questionnaire launch and monitoring	19-5-2014	13-6-2014	20d
24	**Interim Stage**	**9-6-2014**	**11-7-2014**	**25d**
25	Draft interim report	9-6-2014	20-6-2014	10d
26	EC review + meeting	23-6-2014	4-7-2014	10d
27	Final interim report	7-7-2014	11-7-2014	5d
28	**Phase 3 – Data & Econometric Analysis**	30-6-2014	1-8-2014	25d
29	**Phase 4 - Reporting**	**28-7-2014**	**3-10-2014**	**50d**
30	Draft final report	28-7-2014	8-8-2014	10d
31	EC review + meeting	1-9-2014	12-9-2014	10d
32	Final report	15-9-2014	26-9-2014	10d
33	Presentation of final report	29-9-2014	3-10-2014	5d



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8 Annex: List of contacted organisations

Table 8.1 contacted national authorities and copyright collecting organisations

Country	
France	Ministère de la Culture et de la Communication, Bureau de la Propriété Intellectuelle
	SACEM (Société des auteurs, compositeurs et éditeurs de musique)
Germany	Ministry of Justice
	GEMA (Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte)
Poland	Polish Permanent Representation to the EU, Education, Youth, Culture, Sport and Tourism
	ZPAV (Związek Producentów Audio Video)
Spain	Ministry of Education, Culture and Sports, Directorate General for Intellectual Property
	SGAE (Sociedad General de Autores y Editores)
Sweden	Copyright expert
	COPYSWEDE
United Kingdom	Senior Policy Officer, Intellectual Property Office
	ALCS (The Authors' Licensing and Collecting Society)

Table 8.2 contacted music content providers

Company	Type	Country
EMI	Record company	All
BMG	Record company	All
Kompakt	Record label	Germany
Mushroom Pillow	Record label	Germany
Polskie Nagrania Sp.	Record label	Poland
Mystic Production	Record label	Poland
Blanco y Negra Music	Record label	Spain
City Slang	Record label	Germany
K7	Record label	Germany
Everlasting Records and Popstock Distribuciones	Record label	Germany
Cosmos Music Group	Record label	Sweden
Playground Music Scandinavia	Record label	Sweden
Beggars Group	Record label	United Kingdom
Wall of Sound	Record label	United Kingdom

Table 8.3 Contacted Producer associations Audio-visual

Company	Type	country
AFPF	national film producer representatives	France
SPFA	national film producer representatives	France
Bundesverband produktion	national film producer representatives	Germany
Film+fernseh produzentenverband	national film producer representatives	Germany
Verband Seutscher Filmproduzenten	national film producer representatives	Germany

Company	Type	country
Bundesverband Deutscher Film + AV Produzenten	national film producer representatives	Germany
KIPA-Polish Audiovisual producers chamber of commerce	national film producer representatives	Poland
Barcelona Audiovisual	national film producer representatives	Spain
PAC-Producers Audiovisuels de Catalunya	national film producer representatives	Spain
The Swedish Film & TV producers	national film producer representatives	Sweden
PACT	national film producer representatives	United Kingdom
TAC- Welsh Independent Producers	national film producer representatives	United Kingdom

Table 8.4 Contacted audio-visual companies

Company	Type	Country
Pathe	Cinema	France
Todocine	Cinema	Spain
HBO	Pay-tv	All
Arte France Cinema	Producer	France
Constatin Film	Producer	Germany
Se-Ma-For	Producer	Poland
Filmlance International	Producer	Sweden
Ugly Duckling Films	Producer	United Kingdom
Zephyr	Producer	United Kingdom

Table 8.5 Contacted computer games developers

Company	Type	Country
Paradox Interactive	Developer	All
Jagex	Developer	All
Blizzard	Developer	All

Table 8.6 Contacted book publishers

Company	Type	Country
Random House	Publisher	Germany
Bonnier	Publisher	Germany, Poland, Sweden
Grupo Planeta	Publisher	Spain
Holtzbrinck	Publisher	All
Wiley VCH	Publisher	All
The Publishers Association Limited	Association	United Kingdom

9 Interview topic lists

Questions National Authorities and copyright collecting organisations

Regulations

- What are the main regulations in your country on the issue of copyright?
  - Please summarise the key elements of the relevant regulation.

- In the application of national regulations, is the consumption of copyright infringing content by end-users considered to be illegal or is it only the unauthorized dissemination of such content that is considered to be illegal?

- What types of online sources for end users to stream/acquire music, films/TV-series, video games, e-books do you consider to be legal in your country?

  What types of online sources for end users to stream/acquire music, films/TV-series, video games, e-books do you consider to be illegal in your country?

- Which actions to combat internet piracy are available under civil law?

- Which actions to combat internet piracy are available under criminal law?

- Do available actions differ depending on the type of copyrighted product (music, films/TV-series, video games, e-books)? If yes, what are the differences? What is the rationale behind these differences?

- Is there a difference in regulation between uploading and downloading material?

- Are the provisions in the law with regard to copyright different for children (aged below 16) as compared to adults? If yes, what are the differences?
  - For example are children accountable or their parents?
  - And are penalties different for illegal downloads of children (e.g. due to juvenile justice)?

- Are incidental and frequent illegal downloads treated differently? If yes, how?

- Are downloads for commercial purposes treated differently than other downloads? If yes, how?

- Who besides copyright owners is entitled to start a civil procedure against copyright infringements?
  - For example: Content providers? Private enforcement bodies? Other persons or bodies?

Enforcement

- How is copyright enforced by public enforcement bodies? And what role do private enforcement organisations play?

- How strictly do you feel that public enforcement is done (e.g. professionalism/ much time and money spent on enforcement)? Are there differences in enforcement efforts by type of copyrighted product (music, films/TV-series, video games, e-books)?

- What are the main difficulties faced in enforcement?

- What are the competences of public enforcement officers to monitor internet activities and what are the conditions for monitoring these?
    - And what are the competences and conditions for private enforcers?

- Can you provide concrete examples of recent enforcement actions? Have these received attention in the media (if so, how and to what extent)?

- Have any legal action, like law-suits, taken place? Who initiated there actions? Who were defendants in these lawsuits? *Could you provide a reference / describe the outcome if the lawsuit was decided?*

- Have any non-legal actions, like information campaigns, taken place? Who initiated these actions? Who financed these actions?

Developments and policy alternatives

- What are new developments in online availability of copyrighted content that require new legislation?

- What are the positions of various stakeholders with regard to the current legislation?

- Are there perhaps flaws in the current legislation? What are these main flaws?

- If the current legislation would be revised, what do you think could be major changes?

Other

- Do you have any suggestions for sources of statistics on volume and sales for each type of content and each type of distribution channel (e.g. CD's, DVD's)?

- Do you have any suggestions for national-level studies/ data on sizes of legal offer, illegal offer and their interaction?

- Are there any other issues not yet discussed?

Questions for content providers

- Our research focusses on several types of content i.e. *music, films, tv-series, video-games, books, music and theatre attendance*. Please fill out the questionnaire for only one of the content types. For which of the content types are you going to fill out the questionnaire?

- What international media distribution channels are available? *We are already aware of many distribution channels including Spotify, Netflix, YouTube, Canal+. In the appendix of this document we included a list with the major online channels we are aware of. If we have missed major international online channels in the EU please indicate them in the table below.*

  - Please also fill out in the above table if these additional channels are:
    - Free or paid for by the end-user
    - Download/streaming/ subscription
  - Are there differences in legality of these distribution channels within the EU (if yes, please indicate main differences)?

- What country specific online distribution channels are used in the 6 countries covered by this study (France, Germany, Poland, Spain, Sweden and the UK)?
  Note: The annex includes mostly UK specific channels but we are happy to learn about other country specific channels. As in the previous question, we mainly seek to make sure we miss no major online distribution channels.

- What are the main price/product categories used by your branch e.g.
  Music: Singles / albums / streaming / live concerts (music)
  Film: Blockbusters/ arthouse / premium / cinema / dvd rent and purchase
  Videogames: MORPG / console games / subscriptions or micro transactions
  Books: Hardcopy / paperback, audio books / ebooks

  etc.? Is your organisation active in these price/product categories?

- What would you estimate is the share of sales of each main price/product category filled in under question 4 for each country? *For example in the UK the share of blockbusters in sales is 60% and of niche content 40% or in Sweden the share of blockbusters in sales is 70% and of niche content is 30%.*

- What are the price ranges of the price/product categories filled in under question 4 for each country (please use the local currency)?

- What legal actions do you or other private stakeholders take to protect copyrighted content?
  Note: like the previous questions, this applies to the type of content (music, film, tv, video games or book/ebooks) for which you answer the questionnaire.
    - To what extent have they been successful?

- Have any non-legal actions, like information campaigns, taken place? Who initiated these actions? Who financed these actions?

- Can you provide specific examples of recent public or private enforcement actions? Have these received attention in the media (if so, how and to what extent)? *Please mention whether it is a public or private action*

- What do you think would be the impact of reduced internet piracy on:

1) the prices of copyrighted content	
2) the quality of copyrighted content	
3) the diversity of copyrighted content	

  - What would be the impact of reduced internet piracy for bestsellers as compared to niche content?

- Compared to several years ago, what are new developments in the revenues of copyrighted content?

- What is your position with regard to the current legislation on copyright (especially in France, Germany, Poland, Spain, Sweden and the UK)?

- What can be improved in legislation, if any?

Other

- Do you have any suggestions for sources of statistics on volume and sales for each type of content and each type of distribution channel (e.g. CD's, DVD's)? And the turnover of online content providers?

- Are there any other issues which would be relevant for our study not yet discussed?

Attachment to the questionnaire of content providers: List media distribution channels

Music

TYPE	FREE/PAID FOR	LEGAL/ILLEGAL	MAJOR ONLINE CHANNEL
Streaming	Subscription	Legal	Spotify, Deezer Premium
Streaming	Rent or Buy	Legal	iTunes, Amazon MP3
Streaming	Subscription	Legal	Simfy, rara.com, Rdio
Streaming	Free	Legal	Deezer, Pandora Internet Radio, Grooveshark
Filesharing	Free	Illegal	The Pirate Bay, Torrents, Usenet, Mp3skull and variants; cyberlockers

Audio-visual

TYPE	FREE/PAID FOR	LEGAL/ILLEGAL	MAJOR ONLINE CHANNEL	specific countries
Streaming	Free	Legal	YouTube (e.g. Machinima), Hulu Basic	
Streaming	Free / Subscription	Legal	Sky Go	UK

TYPE	FREE/PAID FOR	LEGAL/ILLEGAL	MAJOR ONLINE CHANNEL	specific countries
Streaming	Subscription	Legal	Netflix	
Streaming	Rent or Buy	Legal	Vudu, Amazon Instant, iTunes, iCloud	
Streaming	pay-tv	Legal	HBO Go	
Streaming	pay-tv	Legal	ESPN	
Streaming	Free	Legal	Channel 4, BBC iPlayer, Pathé Archives	UK
stream or download	Buy or rent movies online, paid for per video	Legal	BlinkBox,	UK
Streaming	Pay-tv	Legal	Canal+	ES,FR,PL
Streaming	Pay-tv	Legal	Sky Deutschland	DE
Streaming	Pay-tv	Legal	Canalsat, Numericable	FR
Streaming	Pay-tv	Legal	Cyfrowy Polsat, Cinemax	PL
Streaming	Pay-tv	Legal	C More, Viasat Film	SE
Streaming	Pay-tv	Legal	Sky Digital, Smallworld Cable, BT, Talk Talk Plus Tv	UK
Filesharing	Free	Illegal	The Pirate Bay, Torrents, Usenet, cyberlockers	

Videogames

TYPE	FREE/PAID FOR	LEGAL/ILLEGAL	MAJOR ONLINE CHANNEL	specific countries
Cloud Streaming	Subscription	Legal	Gaikai, Onlive	Onlive: UK
Console shops	Paid for	Legal	Playstation, Kinekt, Xbox, Nintendo	
Mass online	Subscription	Legal	Final Fantasy XIV, World of Warcraft	
Mass online	Freemium	Legal	Everquest,	
Download Platform	Free	Illegal	Top 10 Games, Aomine, Icore Games, Goomia	
Filesharing	Free	Illegal	Fullypcgames, Torrents	

Books

TYPE	FREE/PAID FOR	LEGAL/ILLEGAL	MAJOR ONLINE CHANNEL
Downloads	Paid for	Legal	Bol.com, Ebooks.com, Amazon
Downloads	Free	Legal, if terms and conditions are followed	Free-ebooks
Download Platform	Free	Illegal	Maha Copia, My Entertainment Point, Scribid

TYPE	FREE/PAID FOR	LEGAL/ILLEGAL	MAJOR ONLINE CHANNEL
Filesharing	Free	Illegal	ebookbrowse, 2shared, slideshare

P.O. Box 4175
3006 AD Rotterdam
The Netherlands

Watermanweg 44
3067 GG Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com

W www.ecorys.nl

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