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Abstract

The emergence of online providers aggregating illegal content from streaming platforms is rekindling the debate about online piracy. In the past, the discussion mainly focused on the impact of piracy in content industries and the effect of anti-piracy measures. But little is known about one crucial aspect of piracy: consumers' motivations to use illegal channels. Yet, understanding consumers' behavior could help practitioners and policymakers to allocate their resources better to fight online piracy. In this paper, we fill this gap by focusing on two main motives for the illegal consumption of online content: paying lower (zero) prices and having access to content that is not available in legal channels. To disentangle the role of each motivation in consumers' choice, we ran a laboratory experiment with real consumption, a methodology that provides participants with incentives to reveal their true preferences about consumption while controlling for the choice environment and the consideration set. Our results suggest that consumers turn to illegal channels primarily to save on the price of content, and that they are less sensitive to the availability of content in legal and illegal channels. We discuss the implications of our findings for practitioners and policymakers.

Keywords: piracy, digitization, movies, free, release windows, experiment.

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1. Introduction

The success of streaming services such as Spotify and Netflix seemed to indicate the end of the two-decade-long debate about online piracy. With the availability of a large variety of content against a relatively low subscription fee, consumers would have less incentive to turn to illegal channels. Recently, however, the emergence of a new type of website aggregating content from multiple streaming platforms and distributing it illegally and for free¹ is rekindling the debate on the theme.²

Existing studies about online piracy have focused on three main issues: first, the impact of illegal online consumption on legal sales of content; second, the effect of public and private measures implemented to fight against illegal distribution of content; and third, consumers' motivations to resort to online piracy. While the two first questions received the bulk of researchers' attention, the third one has remained understudied. In this paper, we aim to fill this gap with a laboratory experiment.

Based on past research, we consider that there are two main motivations for individuals to resort to piracy. The first one relates to cost-saving considerations: consumers use illegal channels to obtain products without paying for them (Smith and Telang, 2009). The second motivation is associated with the availability of content: consumers resort to piracy to access goods that they cannot find on legal channels (Danaher and Waldfogel, 2012).³ It is unclear, however, how much each one of these two motivations contribute to consumers' decisions. Yet, disentangling the role of these two types of motivations is relevant to practitioners and policymakers, as it can help them to allocate their resources better to fight online piracy. For example, if consumers are primarily motivated by monetary incentives, reducing access prices to content could be more effective than eliminating release windows across channels and markets. If the main motivation, however, is the ability to access products that are unavailable in a given market or channel, reducing release windows would be a more appropriate response.

Our paper provides two contributions to the current literature about online piracy. The first one is to offer a better understanding of the role of each type of motivation in consumers' decisions to turn to illegal channels. Our findings suggest that individuals use illegal channels primarily to spend less for the consumption of content. Consumers are less sensitive to the respective availability of content in legal and illegal channels.

The second contribution of our work is that we conduct a laboratory experiment with real consumption. In other words, each individual received an initial endowment and was

¹ "Plex makes piracy just another streaming service", by Bijan Stephen, The Verge, July 23, 2019. Available at <https://www.theverge.com/2019/7/23/20697751/piracy-plex-netflix-hulu-streaming-wars>. Last consulted on October 10th, 2019.

² "Piracy is back", by Brian Feldman, New York Magazine, June 26, 2019. Available at <http://nymag.com/intelligencer/2019/06/piracy-is-back.html>. Last consulted on October 10th, 2019.

³ In the movie industry, release dates vary across territories and channels due to right holders' and broadcasters' strategies or to legal obligations. These so-called release windows can be considered as an incentive for consumers to turn towards piracy. For example, Netflix claims that the legal media release window in France encourages piracy at the expense of legal consumption (see <http://www.numerama.com/magazine/33112-festival-de-cannes-2015.html>. Last consulted on October 10th, 2019.)

presented with the opportunity to consume products according to the treatments he or she was assigned to. The advantage of this methodology is that it provides participants with incentives to reveal their true preferences about consumption while controlling for the choice environment and the consideration set (see, for example, Reutskaja et al., 2011; Berlin et al., 2015; Le Lec and Tarrow, 2019). In our experiment, these incentives originated from two core features: first, participants' initial endowment could be reduced depending on their choices, which motivated them to act closer to their real preferences. Second, consumption was made in the laboratory, mitigating the risk of having participants making choices for reasons unrelated to the consumption of that particular good. The laboratory experiment has the advantage of limiting the potential bias of responses related to illegal practices that can exist in questionnaire-based surveys (see Danaher et al., 2014).

To test the two motivations that can influence illegal behavior, we implemented two different treatments in our laboratory experiment. In the first treatment (*Recent*), subjects could choose between a catalog of movies released in theaters more recently but whose consumption could expose them to a fine and a catalog of less recent movies that would not expose them to such a risk. For this treatment, we used distinct release windows for the movies offered, reflecting the release windows of movies across channels.³ In the second treatment (*Free*), subjects could choose between a catalog of free movies exposing them to the risk of a fine, and an offer in which the user would be charged a fee but would not face any fine. The fine introduced in the experiment aimed at capturing the risk faced by individuals when choosing an illegal offer. First, consumers face a legal risk due to the measures implemented against end-user piracy (e.g., the Hadopi measures in France). Second, they face the risk of a loss of utility in case of exposure to malware, finding low-quality videos or content that does not match one's choice or display of annoying advertisements.

We also introduced variables to control for other factors that could affect participants' decisions. First, we performed an adjoining-type experiment to assess participants' attitude to risk (Holt and Laury, 2002). Second, we performed a post-experimental survey, where we asked the participants about their socio-demographic situation and their consumption of content goods outside the laboratory.

Our paper complements two recent studies using controlled experiments to investigate individuals' decisions to turn to illegal channels for content consumption (Godinho de Matos et al., 2018) and their willingness to pay for legal goods (Ćwiakowski et al., 2016). In Section 2, we discuss the differences between our work and these two papers.

The rest of the paper is organized as follows. Section 2 discusses our contribution to the literature on online piracy. Section 3 describes the experiment. Section 4 presents the results. Section 5 shows additional tests for robustness. We conclude in Section 6 with a discussion of the implications of our findings for practitioners and policymakers.

2. Related Literature

Over the last two decades, piracy of content (e.g., music, films or video games) has been a pervasive phenomenon. A large body of literature has developed in response, addressing three

main questions: (1) what is the impact of piracy on legal sales of content, (2) what is the effect of public and private measures implemented to fight against piracy, and finally (3) what are the consumers' motivations to engage in piracy.⁴

On the first topic, the literature has shown that piracy has had, by and large, a negative impact on legal sales of music and movies.⁵ This result has been obtained using different types of data: survey data at the individual level (see, e.g., Bounie et al., 2007; Rob and Waldfogel, 2007; Hennig-Thurau et al., 2007; Bai and Waldfogel, 2012; Herz and Kijanski, 2018), cross-country data (Zentner, 2012), product-level data (De Vany and Walls, 2007; McKenzie and Walls, 2015), and data from peer-to-peer networks (Ma et al., 2014). In addition to hurting sales, piracy could also harm innovation, and therefore the quantity and/or quality of content. However, empirical evidence for the music industry suggests that piracy has not reduced production (Oberholzer-Gee and Strumpf, 2010) and that it has not had any significant negative effect either on the quality of new products (Waldfogel, 2012). In the movie industry, while pre-release piracy is associated with lower revenues even when it creates word-of-mouth, post-release piracy may be associated with an increase in box office revenues (Lu et al., 2019).

The second topic addressed in the literature concerns the impact of government and industry interventions to fight against piracy. Governments have been implementing two types of policies to protect copyright holders. Some have been targeting end-user piracy, for example, with the European Intellectual Property Rights Enforcement Directive (Adermon and Liang, 2014) or the implementation of graduated response policies⁶ (McKenzie, 2017). Other measures have been focusing on commercial piracy, shutting down websites that illegally distribute copyrighted material (Danaher and Smith, 2014; Peukert et al., 2017; Aguiar et al., 2018) or attempting to dry out their advertising revenues (Batikas et al., 2018). Different measures have also been adopted by the industry, in particular, the introduction of digital rights management (DRM) technologies. While DRM technologies were meant to increase the costs of piracy, they also increased the costs of consuming legal content, hurting niche artists particularly. When DRM was removed from the music catalogs of major labels, music sales for these artists increased (Zhang, 2016).

Our work is most closely related to the third stream of literature, which pertains to consumers' motivation to engage in piracy. One hypothesis is that consumers recur to piracy simply because it allows them to obtain digital goods without paying for them. For example,

⁴ For comprehensive surveys of the empirical literature on piracy, see Waldfogel (2012) and Danaher et al. (2014).

⁵ Even though the impact of piracy on sales is negative on average, the effect could be heterogeneous across artists. In particular, there is some evidence that piracy can benefit less well-known artists, by allowing consumers to sample content and discover artists that they would have ignored otherwise (Andersen and Frenz, 2010; Smith and Telang, 2010). The existence of illegal channels could also lead to an increase in the sales of complementary products. For example, musicians might sell fewer music albums due to piracy, while increasing their revenues from ancillary goods (Oberholzer-Gee and Strumpf, 2010).

⁶ Graduated response policies require Internet Service Providers to inform authorities about users who infringe copyright by downloading protected material. Infringers receive a series of notifications on the unlawfulness of their behavior. Repeat-infringers risk technical sanctions such as Internet access suspension and/or economic penalties such as fines. Such policies were adopted, for example, in France, New Zealand, South Korea, and the United Kingdom.

Andersen and Frenz (2010) compare different motivations for pirating music: unwillingness to pay, listening before buying, not wanting to buy an entire album, and not finding the desired album in legal stores. Using survey data for Canada in 2006, they find that the first two motivations affect CD album purchases significantly, but that their aggregate effect is not significant. Another explanation for consumer piracy is that illegal channels offer a more extensive variety of content than legal ones. Therefore, consumers resort to illegal channels to find content they cannot find otherwise. In line with this idea, Danaher et al. (2010) show that when NBC removed its content from iTunes, there was a significant increase in the piracy of the suppressed titles. In the same vein, Danaher and Waldfogel (2012) find that an increase in the delay between a movie release in theaters in the US and its release in other countries decreases the consumption of legal versions in the latter countries. Smith and Telang (2016) find similar results for DVDs. We distinguish from these two last studies by studying the link between the release windows of movies and piracy at the individual level.

Closer to our study, Godinho de Matos et al. (2018) investigate how the availability of subscription video-on-demand (SVOD) services affects piracy behavior. In partnership with a TV and Internet operator, the authors designed a field experiment, randomly assigning households of BitTorrent users to a treatment group that received subscription video-on-demand for free and a control group that did not receive it. They find that the treated households did not change their usage of BitTorrent. However, the availability of the titles a household wishes to watch on the SVOD platform matters. Households that do not have to wait to watch their preferred movies on SVOD, meaning that these titles are readily available, reduce their likelihood of using BitTorrent by 3%.

The literature also shows that the perceived risk of piracy is a critical factor to account for to comprehend consumers' decision-making. For example, Sinha and Mandel (2008) emphasize that the perceived risk of being detected as a pirate may drive consumers towards legal offers. Yet, using survey data, they find that this might not be effective for some segments of consumers (see also Coyle et al., 2009; Sanahan and Hyman, 2010). Likewise, Arnold et al. (2019) use survey data and show that respondents, while illegally downloading, overestimate the probability of being detected by the Graduated Response policy implemented in France. Nevertheless, the results of these surveys should be taken with caution because, as soon as illegal activities are examined, declared behaviors may not reflect actual behaviors accurately (for a discussion of this problem, see Danaher et al., 2014).

Similar to Godinho de Matos et al. (2018), we use an experiment to study individuals' decisions towards legal or illegal consumption in relation to the availability of content. We distinguish from this paper in several fundamental ways. First, a limitation of their study is that their household-level randomized experiment does not allow them to be 100% sure that the users of the SVOD service and the users of the illegal websites are not different persons within the same household. Second, in Godinho de Matos et al. (2018)'s study, the average time a household has to wait for the desired content to be available is only six days, which does not reflect the real release windows between various channels (usually of several months). What they test is probably more the impact of the size of the legal catalog on piracy, rather than the effect of the delay in content availability due to release windows restrictions. In our experimental design, we use release windows of several months, and we control for the

size of the catalog, allowing us to identify the impact of the delay in content availability on piracy. We also control for consumers' choice environment and the choice set. We thus believe that our study nicely complements the one by Godinho de Matos et al. (2018).

Our paper is also closely related to wiakowski et al. (2016), who study the willingness to pay for legal rather than illegal content under different contexts in a discrete choice experiment with real incentives. The authors manipulate dimensions that could affect Internet users' valuation when they can obtain a copy of a movie either from an authorized source or an unauthorized one: movie quality, the risk of penalty, and a small delay in movie consumption due, for example, to exposition to advertisements. Their results show a higher willingness to pay for avoiding risk than accessing a high-quality movie or skipping the ads. The main distinguishing feature of our paper is that we consider among the motivations to recur to illegal consumption the opportunity to access recent content, not yet available in legal channels.

3. Experiment

To disentangle the different motivations at play when consumers pirate content online, we conducted a laboratory experiment during which subjects were invited to choose between a legal and an illegal offer of movies. This methodology allows us to isolate the motivations that relate to the possibility to consume content for free on illegal platforms, and those that concern the availability of more recent content on these platforms compared to legal platforms, which have to comply with release windows restrictions.

In this section, we start by explaining the experimental protocol. Sub-section 3.1 presents the experimental design, while sub-section 3.2 describes the experiment's procedures and the resulting sample.

3.1. Experimental Design

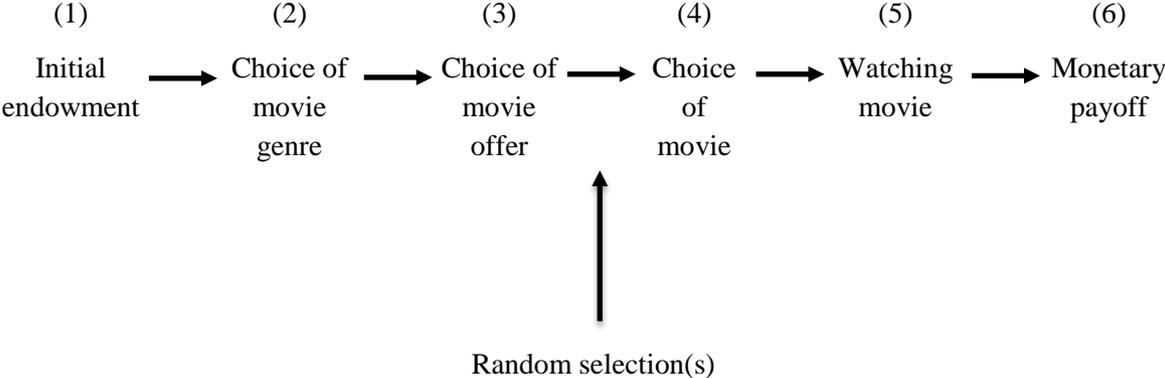
The laboratory experiment was designed to estimate the factors influencing a consumer's decision between a legal and an illegal offer. During the experiment, the subjects were asked to choose between two offers of movies, one with the characteristics of a legal offer and the other one with the characteristics of an illegal offer. The characteristics of these offers varied depending on the experimental treatment, as we detail below. To avoid introducing biases, the terms "legal" and "illegal" were never used during the experiment. Instead, we referred to the illegal and legal offers as "Option A" and "Option B", respectively.

The experiment was based on two treatments: *Recent* and *Free*. In the *Recent* treatment, subjects could choose either a catalog of movies recently released in theaters but whose consumption could expose them to a fine ("Option A" – Illegal Offer) or a catalog of less recent movies that would not expose them to a fine ("Option B" – Legal Offer). Two variations of the *Recent* treatment were introduced in order to better capture subjects' motivations and their sensitivity to variations in the release windows: a larger release window between the recent movies of the illegal catalog and the less recent movies of the legal catalog (*Recent-Large* treatment) and a smaller window between the two catalogs (*Recent-Small*

treatment), which we explain with more details later. In the *Free* treatment, subjects could choose either a catalog of free movies exposing them potentially to a fine (Illegal Offer) or an offer in which the user was charged a fee (reduced from the initial endowment of €40) but would not face any fine (Legal Offer).

The procedure of the *Recent* treatments is presented in more detail in Figure 1.⁷ It involves 6 stages. In the first stage, subjects received an initial endowment of €40, which could be reduced during the experiment depending on their individual decisions.⁸ The procedure served as a monetary incentive for individuals to reveal their true preferences throughout the experiment. In the second stage, subjects were asked to choose a movie genre.⁹ This stage had the objective to control for subjects’ preferences among movie genres outside the lab, and to encourage them to consider the proposed catalogs carefully to get closer to a real-life decision making. Faced with an offer fitting their tastes, they would be more likely to make a choice consistent with their preferences.

Figure 1 –The experiment.



At Stage 3, subjects discovered two offers, a legal one and an illegal one, each composed of four movies. At this point in the experiment, the subjects could not observe the movies available in each offer, only the general characteristics of the offers. This procedure allows us to ensure the choice of an offer is based on its general characteristics rather than a particular movie in an offer.

While outside the lab, the number of movies available is typically higher on illegal platforms than on legal platforms, we introduced the same number of movies (i.e., four) in the legal and illegal offers. This design choice allows us to control for the size of the catalogs in our identification of the motivations to resort to piracy.

For the illegal offer, the subjects learned that it contained four movies that were recently released in theaters, but the consumption of which could expose them to a fine of € with a given probability. In contrast, the legal offer was composed of four less recent movies, and

⁷ The detailed instructions for the Recent-Large Treatment are given in Appendix B as an illustration.
⁸ This particularly high endowment compared to typical laboratory experiments takes into account the fact that the experimental sessions were relatively long, as the subjects had to watch the chosen movie in the laboratory.
⁹ The proposed movie genres were: action/adventure, comedy, comedy-drama/drama, and thriller/crime/spy.

the subject would not face any fine if he or she consumed the movies in this offer. In order to test the effect of different release window, two sub-treatments were implemented: in the *Recent-Large* treatment, the difference in release dates between the four recent movies and the four less recent ones was large (more than 26 months), whereas in the *Recent-Small* treatment this difference was smaller (approximately 14 months).¹⁰

The fine introduced in the laboratory corresponds to the risk taken by a web user when he or she chooses to consume a movie illegally on the Internet. This risk may be due to the threat of legal measures against end-user piracy (e.g., the Hadopi measures implemented in France) or to the risk of being exposed to malware when the web user visits a site with pirated content, of finding a low-quality video or one that does not match one's choice, or being subject to annoying advertisements.¹¹

To measure their preference for the illegal rather than the legal offer, the subjects were asked to assess the risk they were willing to take to access an illegal offer using a multiple-choice table adapted from the “*iterative multiple pricing list*” proposed by Andersen et al. (2006). This procedure provides a more accurate measure than a binary choice between an illegal and a legal offer. The subjects had therefore to complete a table (Table 1 shows the table for the *Recent-Large* treatment): for each line, they had to indicate whether they preferred Option A (the illegal offer) or Option B (the legal offer). We denote by $C^{illegal}$ the number of times the subject chose the illegal offer rather than the legal one. To encourage subjects to reveal their preferences, we made them aware that one of their decisions would be randomly selected and implemented later in the experiment. For example, in the *Recent-Large* treatment (Table 1), if Line 7 was randomly selected and for this line, the subject had chosen Option A, this means that he or she would have access to a catalog of recent movies and that there was a 70% probability of receiving a € fine after watching the movie in the laboratory.¹² A second draw established whether the punishment would be applied or not.

Once the table had been completed, the computer program made a random selection from one of the 10 decisions made by the subject. At Stage 4, the subject discovered the four corresponding movies and had to pick one of them.¹³ If for the randomly selected decision the subject had chosen the illegal offer (Option A), he or she would have access to a recent movie, while if he or she had chosen the legal offer (Option B), he or she would have access to a less recent movie. At Stage 5, the subject watched the movie in the laboratory. This non-monetary incentive mechanism, based on real consumption in the laboratory, ensures that the subjects had to consider the conditions of the offers carefully. Real consumption procedures

¹⁰ The large delay corresponds approximately to the release window for subscription VOD (SVOD) in France (where the experiment took place): a delay of 36 months must exist between a movie release and its availability on SVOD. The small delay corresponds approximately to the release window for broadcast free-to-air TV (22 months). For more details on the release windows in France, see Table A-1 in the Appendix.

¹¹ The € fine introduced in the laboratory may seem relatively high compared with the initial endowment of €40 when considering the fines or the various risks (malware, quality, advertising) taken in reality when pirating. However, Arnold et al. (2019), who ran a questionnaire-based survey on French individuals, highlight that web users greatly overestimate detection capacities of Hadopi.

¹² The subject only discovered the result of this second random selection at the end of the experiment (Stage 6).

¹³ To choose from the four movies, the subjects were given the following information for each movie: title, release date, runtime, director(s) and main cast, plot and available version(s) (i.e., original version, French version, etc.).

have already been implemented in previous lab experiments (see, for example, Reutskaja et al., 2011; Berlin et al., 2015; Le Lec and Tarroux, 2019).

Finally, as Stage 6, after watching the movie, the subjects' monetary payoffs were calculated as follows:

$$\text{Payoff} = \text{€}40 - \begin{cases} \text{€}0 & \text{if for the randomly selected line, the subject had chosen the legal offer} = \text{€}40 \\ \text{€}0 & \text{if for the randomly selected line, the subject had chosen the illegal offer and the second} \\ & \text{random selection did not expose him/her to a fine} = \text{€}40 \\ \text{€}1 & \text{if for the randomly selected line, the subject had chosen the illegal offer and the second} \\ & \text{random selection exposed him/her to a fine} = \text{€}31 \end{cases}$$

The *Free* treatment was identical to the *Recent* treatment, except for characteristics of the legal and illegal offers. In both offers of the *Free* treatment, the four movies were identical, and thus there was no difference in release dates of movies in the two types of offer. The illegal offer was available for free, but the consumption of movies from this catalog could expose the subject to a € fine with a given probability. In contrast, the legal offer, which was available at the price of €, ¹⁴ did not expose subjects to any risk of a fine. As for the *Recent* treatment, the characteristics of the legal and illegal offers were revealed to the subjects before they could make their decision.

Table 2 shows the multiple-choice table that the subjects had to complete at Stage 3 in the *Free* treatment. At the end of the experiment, the subject's monetary payoffs were calculated as follows:

$$\text{Payoff} = \text{€}40 - \begin{cases} \text{€}5 & \text{if for the randomly selected line, the subject had chosen the legal offer} = \text{€}35 \\ \text{€}0 & \text{if for the randomly selected line, the subject had chosen the illegal offer and the second} \\ & \text{random selection did not expose him/her to a fine} = \text{€}40 \\ \text{€}1 & \text{if for the randomly selected line, the subject had chosen the illegal offer and the second} \\ & \text{random selection exposed him/her to a fine} = \text{€}31 \end{cases}$$

Comparing the number of times the subjects chose the illegal rather than the legal offer (*C^{illegal}*) in the *Recent* and *Free* treatments makes it possible to determine subjects' main motivation to resort to piracy, and thus enables us to isolate the impact of the release window restrictions from the monetary aspect in the decision to resort to illegal channels.

¹⁴ The € price is in line with the standard price of renting a movie on a VOD platform such as iTunes at the time of the study (€4.99). We set the fine to € so that with a 50% probability of receiving a fine, a rational risk-neutral subject would choose the illegal offer rather than the legal offer, that is, prefer to face an expected cost of €4.5 (=50%×€) rather than pay the price of € for the legal offer, but with a 60% probability of receiving a fine the same subject would choose the legal offer (as €<60%×€). We chose a 50% probability as the threshold, following Arnold et al. (2019). In their representative survey of 2,000 Internet users in France in 2012, the authors find that most users perceive that there is a probability of 50% of being detected by the Hadopi.

Table 1 – Multiple choice table for the Recent-Large treatment.

Decision Number	Option A	Option B	Option choice	
			Option A	Option B
1	4 recent movies (less than 10 months) 1 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
2	4 recent movies (less than 10 months) 2 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
3	4 recent movies (less than 10 months) 3 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
4	4 recent movies (less than 10 months) 4 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
5	4 recent movies (less than 10 months) 5 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
6	4 recent movies (less than 10 months) 6 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
7	4 recent movies (less than 10 months) 7 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
8	4 recent movies (less than 10 months) 8 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
9	4 recent movies (less than 10 months) 9 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
10	4 recent movies (less than 10 months) 10 in 10 chance of being exposed to a € fine	4 less recent movies (more than 36 months) No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>

Table 2 – Multiple choice table for the Free treatment.

Decision number	Option A	Option B	Option choice	
			Option A	Option B
1	4 free movies 1 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
2	4 free movies 2 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
3	4 free movies 3 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
4	4 free movies 4 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
5	4 free movies 5 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
6	4 free movies 6 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
7	4 free movies 7 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
8	4 free movies 8 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
9	4 free movies 9 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>
10	4 free movies 10 in 10 chance of being exposed to a € fine	4 movies available at a € price No chance of being exposed to a fine	<input type="checkbox"/>	<input type="checkbox"/>

3.2. Procedures

The experiment was conducted in France between May 2016 and April 2017 in the Experimental Economics Lab of Paris 1 University (LEEP). Due to the specific nature of the

experiment, we opted for a “between-subject” design:¹⁵ subjects took part in the *Free* treatment or one of the *Recent* treatments. In total, 274 subjects (56% women, 74% of students from different disciplines and levels) were recruited on a voluntary basis to take part in one of the 16 experimental sessions (see Tables 3 and 4). The recruited population was relatively young, with 62% of participants aged between 18 and 24, 30% between 25 and 30, and 8% over 30. In Tables 3 and 4 and the following tables, the “corrected sample” corresponds to a smaller sample, obtained by excluding 4 participants who did not understand the instructions of an additional experiment that we conducted to estimate the subjects’ attitude to risk, as we will explain at the end of the sub-section.

Table 3 – Characteristics of treatments.

Treatment	Number of sessions	Full sample		Corrected sample	
		Number of participants	Average payoff	Number of participants	Average payoff
Free	5	93	€38.52	92	€38.53
Recent 24	6	89	€42.27	87	€42.28
Recent 36	5	92	€42.60	91	€42.61
Total	16	274	€41.11	270	€41.11

Table 4 – Description of sample.

	Full sample	Corrected sample
Male	43.80%	43.33%
Female	56.20%	56.67%
[18-24] yrs	62.04%	62.59%
[25-30] yrs	29.56%	29.63%
[31-40] yrs	8.39%	7.78%
Student	74.45%	74.44%
Non Student	25.55%	25.56%
n	274	270

At the beginning of each session, the instructions were read to the participants.¹⁶ Once the subjects had completed a comprehension questionnaire, and if there were no remaining questions, the experiment could start. At the end of the experiment, the participants were invited to answer a post-experiment questionnaire about their socio-demographic situation, their movie consumption outside the laboratory, and their attitude towards piracy and legal offers outside of the laboratory. Again, the words “illegal” and “piracy” were never mentioned. Instead, we asked the participants if they watched films online for free and, if so, what websites they were using. We then matched the participants’ answers with an official list of websites considered as illegal by public authorities in France. Participants who had mentioned a website from this list were considered as having engaged in illegal consumption of movies. Table 5 presents participants’ movie consumption on legal and illegal channels. It

¹⁵ The “between-subject” approach provides causal estimates as long as the assignment to the treatment groups is random. According to Charness et al. (2012), although in many instances, both approaches can yield similar results, the “between-subject” approach is more conservative. We then employ this approach.

¹⁶ The instructions to all treatments were recorded by the same person and played before the session, according to the treatment. As an example, the instructions for the *Recent-Large* treatment are available in Appendix B.

shows that approximately two-thirds of the participants had consumed movies illegally. Concerning legal consumption, the theater was the most often used media to watch movies outside the laboratory, followed by television. VOD and SVOD were the least used legal channels. As the experiment was conducted in France, the post-experiment questionnaire also asked whether the subjects had received a notification from the Hadopi or if someone they knew had received one.¹⁷ Table 6 presents the results and shows that a large proportion of the subjects (almost one in two) had received or knew someone who had received a notification from the Hadopi.

Table 5 – Proportion of legal and illegal consumption.

	Full sample (n = 274)			Corrected sample (n = 270)		
	Non Consumer	Occasional consumer	Regular consumer	Non Consumer	Occasional consumer	Regular consumer
<i>Illegal channel</i>						
*Direct piracy	37.23%	32.12%	30.66%	37.04%	32.22%	30.74%
*Indirect piracy	36.50%	54.74%	8.76%	36.30%	54.81%	8.89%
<i>Legal channel</i>						
Theater	3.28%	51.46%	45.26%	2.96%	51.48%	45.56%
DVD-Blu-ray	32.48%	41.97%	25.55%	31.85%	42.59%	25.56%
VOD	60.58%	19.34%	20.07%	60.37%	19.26%	20.37%
SVOD	65.69%	12.77%	21.53%	65.56%	12.96%	21.48%
Television	15.33%	55.84%	28.83%	15.56%	56.30%	28.15%

*Note: direct piracy corresponds to an individual's watching movies that he or she has streamed or downloaded from illegal sites; indirect piracy corresponds to an individual's watching copies offered by someone else (in a pen drive, for example).

Table 6 – Proportion of participants having received a message from the Hadopi.

	Full sample (n = 274)	Corrected sample (n = 270)
Oneself	10.58%	10.74%
A friend	44.53%	44.81%
Oneself or a friend	47.81%	48.15%

In addition to the post-experiment questionnaire, the subjects were invited to take part in an adjoining-type experiment to assess their attitude to risk (Holt and Laury, 2002). Theoretically, individual risk attitude can play a role in the choice of the legal or illegal offer in the main experiment. This additional experiment allows us to obtain a measure of risk attitude, and control for it when we later study the choice between the legal and illegal offers.

The Holt and Laury experiment relies on a real monetary incentive for choices and has the advantage of being decontextualized. The principle is as follows: the participants have to

¹⁷ Individuals convinced of infringing copyrighted material receive a notification from the Hadopi, informing them of the infringement and the consequences of repeat infringement. In the analysis of results, we decided to group the individuals who had personally received a notification and those who knew someone who had received one, partly because refusal to admit to an illegal act often leads to its being attributed to a friend, and partly also because, the subjects being relatively young, it is likely that the Internet subscription corresponding to the IP address identified by the Hadopi is not in their name (parents, roommates, etc.).

make ten lottery choices presented on the same screen and ranked in ascending order of probability (Table 7). Each choice is composed of a “safe” lottery (i.e., offering less variable gains – Option A in Table 7) and a “risky” lottery (Option B in Table 7). At the end of the experiment, one of the choices is randomly selected and the lottery is played to determine the participants’ payoffs. We used identical parameters as those introduced in Holt and Laury (2002)’s “low real” treatment, except that the participants could only change once from the “safe” option to the “risky” option.

By examining the number of safe choices, the Holt and Laury (2002) lottery-choice procedure gives us a measure of subjects’ attitude to risk. A risk-neutral subject will choose the “safe” lottery (Option A in Table 7) four times before choosing the risky lottery (Option B in Table 7) as the expected payoff is higher for the first to the fourth decisions, whereas the expected payoff is higher from the fifth decision. With such a procedure, even a highly risk-averse subject should switch once from the “safe” option to the “risky” option since the certain payoff associated with Option B at the tenth decision is €3.85, compared to €2 for Option A.

Table 8 presents the distribution of the number of “safe” lottery choices among the 274 participants of the laboratory experiment and the description of the risk preference classification. In line with previous studies, we find that the subjects had a relatively heterogeneous attitude toward risk, even if the majority chose the “safe” option 5 (13.9%), 6 (24.5%) or 7 (23.7%) times. Almost 6% of the subjects were risk-loving, 12% risk-neutral, 38% risk-averse, and at least 44% were highly risk-averse.¹⁸ Four subjects among the 274 chose the “safe” option for their final choice, preferring to win €2 with certainty than €3.85 with certainty. Since it seems that these subjects have not understood the instructions, we exclude them from the main sample to obtain a “corrected” sample. There is, however, no significant difference between the full sample and the corrected sample.

Table 7 – Holt and Laury’s procedure to measure risk.

Decision number	Option A				Option B				Option choice	
	Prob.	Payoff	Prob.	Payoff	Prob.	Payoff	Prob.	Payoff	Option A	Option B
1	10%	€2	90%	€1.6	10%	€3.85	90%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
2	20%	€2	80%	€1.6	20%	€3.85	80%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
3	30%	€2	70%	€1.6	30%	€3.85	70%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
4	40%	€2	60%	€1.6	40%	€3.85	60%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
5	50%	€2	50%	€1.6	50%	€3.85	50%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
6	60%	€2	40%	€1.6	60%	€3.85	40%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
7	70%	€2	30%	€1.6	70%	€3.85	30%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
8	80%	€2	20%	€1.6	80%	€3.85	20%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
9	90%	€2	10%	€1.6	90%	€3.85	10%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>
10	100%	€2	0%	€1.6	100%	€3.85	0%	€0.1	<input type="checkbox"/>	<input type="checkbox"/>

¹⁸ In Holt and Laury (2002)’s original experiment, 8% of subjects were risk-loving, 26% risk-neutral, 49% risk-averse, and 17% highly risk-averse. The difference with our study can be explained by participants’ different countries of residence (France versus the United States) and by a difference of repetition of choices (non-repeated versus repeated).

Table 8 – *Distribution of safe lottery choice.*

Number of safe choices	Risk preference classification	Full Sample (n = 274)	Corrected Sample (n = 270)
0-1	Highly risk loving	1.46%	1.48%
2	Very risk loving	1.09%	1.11%
3	Risk loving	3.28%	3.33%
4	Risk neutral	11.68%	11.85%
5	Slightly risk averse	13.87%	14.07%
6	Risk averse	24.45%	24.81%
7	Very risk averse	23.72%	24.07%
8	Highly risk averse	9.12%	9.26%
9-10	Very highly risk averse	11.31%	10.00%

Note: the classification of the individual risk preference is based on Holt and Laury (2002).

The adjoining experiment to measure the attitude toward risk was conducted before the main experiment of choice of movie catalog, but the participants only discovered their payoff for the adjoining experiment at the end of the experimental session. This payoff was added to the payoff from the main experiment. The total payoff for each participant was thus calculated as follows:

$$\text{Total payoff} = \text{payoff from the "choice-of-movie" experiment} \\ + \text{payoff from the "Holt-and-Laury's type" experiment}$$

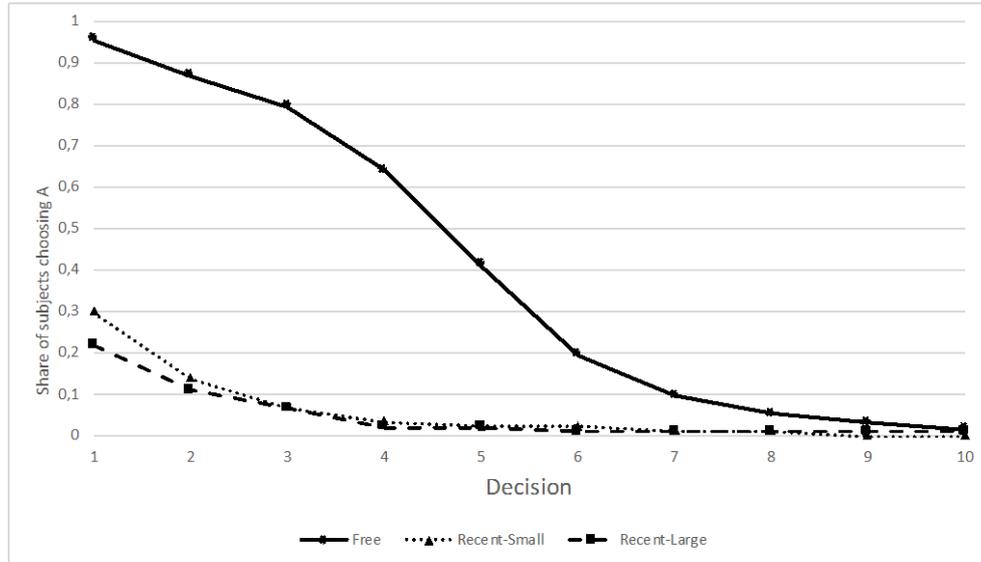
In the end, participants' average payoff was €1.11 (see Table 3), and the sessions lasted an average of 2 hours and 30 minutes (including reading instructions, the "Holt-and-Laury's type" experiment, the "choice-of-movie" tasks, watching the movie, the post-experiment questionnaire and subjects' payment).

4. Results of the experiment

4.1. Descriptive statistics

To determine the main motivation for movie piracy, we compare subjects' choices between the legal and illegal offers in the *Free* and *Recent* treatments. Figure 2 presents the share of subjects who chose Option A (the illegal offer) rather than Option B (the legal offer) for each of the ten decisions, as listed in Tables 1 and 2, and for all treatments. The figure shows that the share of subjects who chose the illegal offer is lower in the *Recent* treatments than in the *Free* treatment, for all decisions. Furthermore, once the first decision has been made, the share of subjects who choose the illegal offer is similar in the *Recent-Small* and the *Recent-Large* treatments.

Figure 2 – Share of subjects who chose Option A (illegal offer) per treatment.



As further evidence, Table 9 presents the summary statistics for the number of times the illegal offer was chosen ($C^{illegal}$) per treatment. It shows that, on average, the illegal offer was chosen more often in the *Free* treatment than in the *Recent* treatments. On average, an individual chose the illegal offer 4.08 times in the *Free* treatment, while he or she chose the illegal offer in 0.61 of cases in the *Recent-Small* treatment and in 0.49 of cases in the *Recent-Large* treatment. Table 10 shows that the differences between the *Free* and *Recent* treatments are statistically significant, but that there is no significant difference between the *Recent-Small* and *Recent-Large* treatments.

Table 9 – Number of times the illegal offer was chosen ($C^{illegal}$).

Treatment	n	mean	standard deviation	min	max	median
Free	92	4.08	2.09	0	10	4
Recent-Small	87	0.61	1.31	0	8	0
Recent-Large	91	0.49	1.35	0	10	0

Table 10 – Difference between $C^{illegal}$ treatments (Mann-Whitney test).

	Z	P
Free vs. Recent-Small	10.052***	0.000
Free vs. Recent-Large	10.567***	0.000
Recent-Small vs. Recent-Large	1.133	0.2571

This descriptive analysis suggests that being able to access movies for free is a more important motivation for opting for an illegal distribution channel than the possibility to access more recent movies. Furthermore, there seems to be no significant difference in the choice between the legal and illegal channels if the illegal offer contains more or less recent movies.

4.2. Econometric analysis

To test the robustness of these results, we conducted an econometric analysis controlling for other factors that could influence a participant’s choice between the legal and illegal offers (risk preference, movie consumption outside the lab, etc.).

We use as dependent variable the number of times the participant chose the illegal offer rather than the legal offer ($C^{illegal}$). The other independent variables include dummy variables for each of the treatments, the baseline treatment being the *Free* treatment, socio-demographic variables (gender, age, occupation), variables for the intensity of movie consumption outside the lab on all (legal and illegal) channels (see Table A-2 in the Appendix), and a dummy variable indicating whether the subject or one of his or her friends had received a notification from the Hadopi (see Table 6). Finally, we control for risk preference with the discrete variable *Risk Attitude*. It takes values from 0 to 9, according to the number of times the subject chose the “safe” lottery in the Holt and Laury’s experiment.¹⁹

Table 11 presents the estimation results using an OLS model. We find that the coefficients of the variables *Recent-Small Treatment* and *Recent-Large Treatment* are negative and significant. Therefore, everything else equal, the subjects chose the illegal offer more often than the legal offer to access movies for free rather than to access more recent movies. The difference in release dates between the movies in the legal and illegal catalogs does not play any significant role: the coefficients of the *Recent-Small* and *Recent-Large* treatment variables have the same magnitude in the estimation results. These findings confirm that the main motivation for piracy is to access content for free, rather than to access recent movies not yet available in legal channels.

Students and younger participants (18-24 years old) chose more often the illegal offers than other participants. Having received a notification from the Hadopi or knowing someone who has does not affect the number of illegal offer choices.

One technical concern is that our dependent variable is truncated and not continuous; the linearity of the model may thus drive the results. As a robustness check, we ran three alternative regression models presented in Table 12. The first one is the Negative Binomial model, as the dependent variable can also be interpreted as “how many times does an individual choose A before turning to B.”²⁰ We also estimated an ordered Probit model, with the idea that the dependent variable can be interpreted as an ordered choice variable, and a Tobit model with left-censored observations. We ran the three regressions using all the variables, as in the specification corresponding to the results in Column 5 of Table 11. The sign and significance of the estimators of the main variables remain the same as in the OLS estimation. For ease of interpretation, we consider the results in Table 11 for the discussion.

¹⁹ Our results are unchanged if we use three dummies reflecting three categories of risk aversion (“Not risk-averse,” “Risk-averse,” “Highly risk-averse”).

²⁰ We use the Negative Binomial model instead of Poisson due to the overdispersion in our data. Typically, $\mu < \sigma^2$ is a sign of overdispersion. In our case, we obtain $\mu = 2.639$ and $\sigma^2 = 8.331$. A goodness-of-fit test confirmed that the Negative Binomial model is a better fit than the Poisson model.

Table 11 – OLS regressions of the number of illegal offer choices.

VARIABLES	(1)	(2)	(3)	(4)	(5)
Free	(Baseline)	(Baseline)	(Baseline)	(Baseline)	(Baseline)
Recent-Small Treatment	-3.467*** (0.244)	-3.481*** (0.238)	-3.470*** (0.238)	-3.448*** (0.239)	-3.446*** (0.239)
Recent-Large Treatment	-3.582*** (0.241)	-3.527*** (0.236)	-3.473*** (0.238)	-3.480*** (0.238)	-3.476*** (0.236)
Risk Attitude		-0.217*** (0.0553)	-0.200*** (0.0561)	-0.197*** (0.0561)	-0.196*** (0.0559)
<i>Socio-demographic variables</i>					
Students			-0.453* (0.258)	-0.486* (0.259)	-0.484* (0.258)
18-24 yrs	(Baseline)	(Baseline)	(Baseline)	(Baseline)	(Baseline)
25-30 yrs			-0.556** (0.242)	-0.542** (0.242)	-0.548** (0.241)
31+ yrs			-0.163 (0.403)	-0.123 (0.404)	-0.142 (0.404)
Female			-0.177 (0.199)	-0.167 (0.199)	-0.180 (0.199)
<i>Levels of movie consumption</i>					
Illegal channels				0.0734 (0.0568)	0.0817 (0.0571)
Legal channels				-0.00482 (0.0328)	
Irrespective of channels			0.0172 (0.0261)		
Hadopi					-0.165 (0.199)
Constant	4.076*** (0.170)	5.391*** (0.374)	5.730*** (0.530)	5.705*** (0.530)	5.736*** (0.486)
Observations	270	270	270	270	270
Prob > F	0.000	0.000	0.000	0.000	0.000
R-squared	0.514	0.541	0.555	0.557	0.558
Adjusted R-squared	0.511	0.535	0.541	0.541	0.542

Standard errors in parentheses; *p<0.10, **p<0.05, ***p<0.01.

Table 12 – *Alternative regressions of the number of illegal offer choices.*

VARIABLES	Negative Binomial	Ordered Probit	Tobit	OLS
Free	(Baseline)	(Baseline)	(Baseline)	(Baseline)
Recent-Small Treatment	-1.955*** (0.168)	-2.183*** (0.202)	-5.195*** (0.444)	-3.446*** (0.239)
Recent-Large Treatment	-2.092*** (0.176)	-2.322*** (0.204)	-5.538*** (0.456)	-3.476*** (0.236)
Risk Attitude	-0.131*** (0.0353)	-0.146*** (0.0429)	-0.329*** (0.103)	-0.196*** (0.0559)
<i>Socio-demographic variables</i>				
Student	-0.442*** (0.159)	-0.341* (0.194)	-0.902* (0.468)	-0.484* (0.258)
18-24 yrs	(Baseline)	(Baseline)	(Baseline)	(Baseline)
25-30 yrs	-0.522*** (0.159)	-0.470** (0.187)	-1.133** (0.453)	-0.548** (0.241)
31+ yrs	-0.190 (0.254)	-0.215 (0.313)	-0.531 (0.755)	-0.142 (0.404)
Female	-0.0942 (0.124)	-0.107 (0.149)	-0.237 (0.360)	-0.180 (0.199)
<i>Levels of movie consumption</i>				
Irrespective of channel	0.0280 (0.0341)	0.0508 (0.0428)	0.123 (0.104)	0.0817 (0.0571)
Hadopi	-0.0883 (0.125)	-0.105 (0.150)	-0.247 (0.363)	-0.165 (0.199)
Constant cut1		-2.906*** (0.406)		
Constant cut2		-2.373*** (0.398)		
Constant cut3		-2.036*** (0.391)		
Constant cut4		-1.554*** (0.379)		
Constant cut5		-1.024*** (0.371)		
Constant cut6		-0.439 (0.372)		
Constant cut7		-0.0410 (0.380)		
Constant cut8		0.184 (0.388)		
Constant cut9		0.434 (0.404)		
Constant cut10		0.548 (0.415)		
Constant	2.676*** (0.304)		6.957*** (0.886)	5.736*** (0.486)
Observations	270	270	270	270
Prob > chi2	0.000	0.000	0.000	
Pseudo R2	0.186	0.219	0.208	
Prob > F				0.000
R-squared				0.558
Adjusted R-squared				0.542

Standard errors in parentheses; *p<0.10, **p<0.05, ***p<0.01; 134 left-censored observations in the Tobit model (dependent variable ≤ 0).

5. Additional Robustness Experiments

In the previous section, we showed that the subjects were more inclined to pirate movies when the content was available for free than when it was recent, irrespective of the difference in release dates between the movies in the legal and illegal catalogs. To test the robustness of these findings, we carried out two additional experimental treatments: one with the implementation of a monetary incentive system identical in the *Free* and *Recent* treatments to test for a possible self-selection bias in the experiment's participants (Section 5.1), and the other one with different types of sanctions (Section 5.2).

Table 13 presents the characteristics of robustness treatments. Overall, 481 subjects participated in one of them.²¹ As previously mentioned, we decided to exclude 4 participants from the analysis, because they responded that they would prefer to win €2 with certainty rather than €3.85 with certainty in the Holt and Laury's type lottery. In the analysis below, we thus focus on the corrected sample of 477 observations.

Table 13 – *Characteristics of robustness treatments.*

Robustness test	Treatment	Number of sessions	Full sample		Corrected sample	
			Number of participants	Average payoff	Number of participants	Average payoff
Test 1	Mixed-Small	5	88	€38.49	87	€38.51
	Mixed-Large	5	93	€37.93	92	€37.94
Test 2-A	Free-Fine 17	3	57	€37.35	57	€37.35
	Recent-Small-Fine 17	3	57	€42.61	57	€42.61
	Recent-Large-Fine 17	3	56	€42.64	56	€42.64
Test 2-B	Free-Cut-off	3	58	€40.95	57	€40.93
	Recent-Small-Cut-off	2	36	€42.67	35	€42.69
	Recent-Large-Cut-off	2	36	€42.64	36	€42.64
	Total	26	481	€40.14	477	€40.14

5.1. Subjects' self-selection

While in the *Free* treatment, the design of the main experiment was based exclusively on monetary incentives (a possible € fine in the event of choosing the illegal offer versus a cost of €5 with certainty when selecting the legal offer), the *Recent* treatments were based on both monetary and non-monetary incentives (possible € fine and consumption of a recent movie with the illegal offer versus consumption of a less recent movie when choosing the legal offer, but with no cost).

One concern was that our results could be affected by a self-selection bias, with subjects preferring monetary payoffs in the laboratory compared with non-monetary payoffs, as might be the case by comparing the *Free* treatment with the *Recent* treatments. We thus carried out a control treatment, called *Mixed*, combining the characteristics of the *Recent* and *Free* treatments. In the *Mixed* treatment, the subjects had to choose between an (illegal) offer of free and recent movies, which could expose them to a € fine with a given probability, and a (legal) offer of less recent movies that would not expose them to a fine but for which they

²¹ Note that each subject participated in only one treatment. Therefore, the 481 participants in the robustness treatments did not take part in the main experiment.

would be charged €5. Like the *Recent* treatment, the *Mixed* treatment was subdivided into two sub-treatments, *Mixed-Small* and *Mixed-Large*, depending on the difference in release dates between the movies in the legal and illegal offers (small or large). In total, the corrected sample includes 179 subjects who were recruited to participate in one of the *Mixed* treatments (see Table 13).

If how recent are the movies in the illegal catalog has a negligible effect on the choice between the legal and illegal offers, compared to the possibility to access content for free, the subjects' decisions in the *Mixed* treatments should not be significantly different from those in the *Free* treatment. Indeed, a subject who has to choose between an illegal catalog of free and recent movies with the risk of a fine and a legal catalog of less recent movies accessible for a fee (*Mixed* treatment) should then make the same decision than if he or she has to choose between the free catalog with the risk of a fine and the legal catalog for a fee (*Free* treatment).

Table 14 and Table 15 confirm this intuition. They show that there is no significant difference between the *Free* and *Mixed* treatments: introducing differences in release dates between the legal and illegal offers in the *Free* treatment does not significantly change the number of times the subjects choose the illegal offer. We also performed a similar econometric analysis than in the main experiment, with the same control variables, and it gave similar results (see Table A-3 in the Appendix for the estimation results).

Table 14 – Number of times the illegal offer is chosen ($C^{illegal}$) in the *Mixed* treatments.

Treatment	n	Mean	Standard deviation	min	max	Median
Free	92	4.08	2.09	0	10	4
Mixed-Small	87	4.26	1.71	0	9	4
Mixed-Large	92	4.12	2.06	0	10	4

Table 15 – Difference between treatments of $C^{illegal}$ (Mann-Whitney test) with *Mixed* treatments.

	z	p
Free vs. Mixed-Small	-0.664	0.5064
Free vs. Mixed-Large	-0.275	0.7832
Mixed-Small vs. Mixed-Large	0.396	0.6921

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

5.2. Amount of the fine and type of sanction

In the main experiment, subjects were exposed to a €9 fine when choosing the illegal offer. As robustness check, we ran additional experiments, varying the amount of the fine as well as the type of sanction.

5.2.1. Amount of the fine

In the baseline treatments (*Free*, *Recent-Small* and *Recent-Large*), the subjects faced the threat of a €9 fine. As a robustness check, we tested treatments with a higher fine, set at €17.

These treatments were otherwise identical in every way to the baseline treatments. In total, 170 subjects participated in these robustness treatments called *Free-Fine 17*, *Recent-Small-Fine 17*, and *Recent-Large-Fine 17* (see Table 13).

Tables 16 and 17 present the average number of times the subjects chose the illegal offer. We obtain similar results than with a € fine: subjects selected the illegal offer more often in the *Free-Fine 17* treatment than in the *Recent-Fine 17* treatments, whatever the difference in release dates between the legal and illegal catalogs (small or large). Thus, the choice of the illegal offer is still influenced more by the possibility to consume content for free than by the opportunity to access more recent content. The estimation results of the econometric analyses are also qualitatively similar to those obtained for the baseline treatments (see Table A-4 in the Appendix).

Table 16 – Number of times the illegal offer is chosen ($C^{illegal}$) with a €17 fine.

Treatment	n	mean	Standard deviation	min	max	median
Free-Fine 17	57	1.49	1.67	0	9	1
Recent-Small-Fine 17	57	0.47	0.98	0	4	0
Recent-Large-Fine 17	56	0.32	0.72	0	3	0

Table 17 – Difference between the treatments of $C^{illegal}$ (Mann-Whitney test) with a €17 fine.

	z	p
Free-Fine 17 vs. Recent-Small-Fine 17	4.235***	0.0000
Free-Fine 17 vs. Recent-Large-Fine	4.858***	0.0000
Recent-Small-Fine 17 vs. Recent-Large-Fine	0.555	0.5791

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

5.2.2. Non-monetary sanction

In the baseline treatments, the sanction faced by a subject when choosing the illegal offer was in monetary terms (a € fine). As a robustness check, we also tested the impact of a non-monetary sanction: a subject opting for the illegal offer could face a cut-off while watching the movie instead of a € fine. If subject to a cut-off, the movie was stopped 30 minutes before the end. The subjects had to wait during these 30 minutes and could do nothing else (no paper, smartphone or other distraction were allowed). Three robustness treatments were carried out: the *Free-Cut-off* treatment, and the *Recent-Small-Cut-off* and *Recent-Large-Cut-off* treatments. These treatments were identical to the baseline treatments (*Free*, *Recent-Small*, and *Recent-Large*) except for the type of sanction. In total, 128 subjects took part in these robustness treatments (see Table 15).

Tables 18 and 19 show the results for these treatments with a non-monetary sanction. We see that our main results are not affected by the nature of the sanction (see also Table A-5 in the Appendix). Subjects are still driven more towards the illegal offer because they can access

movies for free, even if they risk to be interrupted, than if the illegal offer contains more recent movies than the legal offer.

Table 18 – Number of times the illegal offer is chosen ($C^{illegal}$) with movie cut-off.

Treatment	n	mean	Standard deviation	min	max	median
Free-Cut-off	57	7.88	2.95	0	10	10
Recent-Small-Cut-off	35	1.85	2.21	0	10	1
Recent-Large-Cut-off	36	2.78	2.79	0	10	2.5

Table 19 – Difference between treatments of $C^{illegal}$ (Mann-Whitney test) with movie cut-off.

	Z	p
Free-Cut-off vs. Recent-Small-Cut-off	6.978***	0.0000
Free-Cut-off vs. Recent-Large-Cut-off	6.224***	0.0000
Recent-Small-Cut-off vs. Recent-Large-Cut-off	-1.478	0.1393

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

6. Conclusion

New forms of piracy have reinvigorated the discussion around piracy. In this paper, we contribute to this debate by investigating an aspect of piracy that has remained understudied: the motivation of consumers to turn to illegal channels. We considered two main motivations for illegal consumption: price-related motivations (having access to a good without paying for it) and availability-related motivations (having access to a good that would be difficult to obtain otherwise). Our objective was to disentangle the two types of motivations and to understand their relative role in explaining pirate behavior.

One of the strengths of our study is the use of a laboratory experiment with real consumption, a methodology that provides participants with incentives to reveal their true preferences about consumption while controlling for the choice environment and the consideration set. We aim at capturing the consumers' decision-making process regarding the costs and benefits of consuming goods via an illegal channel. While consumers can have access to content for free or to more recent content on illegal channels, they face the risk of being exposed to malware, low-quality videos, content that does not match one's choice or annoying advertisements. The consumer can also be subject to legal measures against end-user piracy (e.g., the Hadopi measures implemented in France).

Our results suggest that the main motivation for piracy is to save on the price of content. Consumers are less sensitive to the fact that illegal channels provide a broader choice of content. These results are robust to several specifications. In practical terms, our results suggest that reducing the window between the theatrical release and the availability in other channels is likely to have a limited impact on piracy.

In light of our findings, two types of measures seem to be more effective. First, measures focusing on reducing the prices of goods. The recent emergence of streaming services with a subscription-based business model appears to be a suitable solution. In the last couple of

years, however, producers have been pulling out their films and series from the existing services to launch their streaming platforms that will offer their productions in exclusivity. This movement has been fragmenting the market and increasing the overall costs for consumers to find the goods of their preferences. The full analysis of the impact of this fragmentation (and of the “subscription fatigue”)²² on piracy is beyond the scope of our study and left for future research. However, our findings suggest that piracy is likely to increase due to an augmentation in the total price of access to content.

The second type of measure is to increase the cost of piracy through fines or other types of penalties. It is relevant to note that in our lab experiment, subjects showed that increasing enforcement (i.e., the likelihood of being caught) also increases compliance with the law. However, the benefits from a reduction of piracy should be balanced with the costs of anti-piracy measures.

We are confident that our experimental approach enables us to obtain causal estimates, as the matching between participants and treatments was random. We also provided robustness tests to ensure that our results hold under different conditions.

We acknowledge, however, that our work has limitations. The first one is that as in many laboratory experiments, participants were mainly undergraduate students. Although this composition might raise concerns regarding the external validity of the results, we argue that the bulk of illegal consumption tends to come from younger individuals (Cox and Collins, 2014). The second limitation concerns geography. Since country-specific factors (e.g., social norms or the perception and knowledge about piracy) can affect the motivations for piracy, the results may vary with the location of the experiment. It would thus be interesting to reproduce the experiment in other countries.

²² “‘Subscription Fatigue’: Nearly Half of U.S. Consumers Frustrated by Streaming Explosion, Study Finds,” Todd Spangler, March 18th, 2019, Variety. Available at <https://variety.com/2019/digital/news/streaming-subscription-fatigue-us-consumers-deloitte-study-1203166046/>. Last consulted on November 27th, 2019.

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Appendix A: Tables

Table A-1 – Release windows by media in France and US.

Released in	Movie theater	DVD/VOD	SVOD	Pay-TV	Free-to-air TV
US	t_0	$t_0 + 3 - 4$ months	$t_0 + 3 - 4$ months	$t_0 + 12 - 18$ months	$t_0 + 34 - 36$ months
France	t_0	$t_0 + 3 - 4$ months	$t_0 + 36$ months	$t_0 + 10 - 12$ months	$t_0 + 22 - 30$ months

Source: Smith and Telang (2016) for the US, CSA for France.²³

Table A-2 – Level of legal and illegal consumption ($n = 274$).

	Possible values	Average	Standard deviation	Min	Max	Median
Illegal (direct or indirect piracy)	0 – 8	2.59	1.80	0	8	2
Legal (movie theater, VoD, DvD, SVoD, television)	0 – 20	6.07	3.04	0	16	6
Irrespective of channel	0 – 28	8.66	3.81	0	20	8

Note: participants were asked the intensity of their movie consumption via the different distribution channels (theaters, DVD-BluRay, VOD, subscription VOD, television, direct piracy from illegal sites or indirect piracy via copies given by friends). Intensity was quantified from “Several times a week” to “Never” via “Once a week”, “Once to three times a month” and “Less often”. These consumption modes were then grouped together into several categories: Irrespective of mode, Illegal (direct or indirect piracy) and Legal.

²³ Some aspects of the release windows in France changed in 2019. More information can be found on the website of the European Observatory for the Audiovisual: <https://merlin.obs.coe.int/iris/2019/2/article12.en.html>

Table A-3 – Regressions of the number of illegal offer choices with Mixed treatments.

VARIABLES	(1) $C_{illegal}$	(2) $C_{illegal}$	(3) $C_{illegal}$	(4) $C_{illegal}$	(5) $C_{illegal}$
Free Treatment	Ref.	Ref.	Ref.	Ref.	Ref.
Mixed-Small Treatment	0.188 (0.294)	0.152 (0.287)	0.141 (0.291)	0.150 (0.292)	0.142 (0.292)
Mixed-Large Treatment	0.0435 (0.290)	0.0274 (0.282)	0.0373 (0.285)	0.0428 (0.285)	0.0412 (0.285)
Risk attitude		-0.246*** (0.0611)	-0.249*** (0.0627)	-0.244*** (0.0631)	-0.243*** (0.0631)
<i>Socio-demographic variables</i>					
Student			-0.0604 (0.321)	-0.0650 (0.321)	-0.0656 (0.323)
18-24 yrs			Ref	Ref	Ref
25-30 yrs			-0.213 (0.302)	-0.218 (0.302)	-0.215 (0.302)
31+ yrs			-0.154 (0.536)	-0.160 (0.537)	-0.155 (0.537)
Female			-0.195 (0.239)	-0.204 (0.239)	-0.205 (0.240)
<i>Level of movie consumption</i>					
Irrespective of channel			0.00553 (0.0279)		
Illegal channels				0.0495 (0.0655)	0.0452 (0.0639)
Legal channels				-0.0121 (0.0366)	
Hadopi					-0.0344 (0.241)
Constant	4.076*** (0.205)	5.568*** (0.420)	5.748*** (0.649)	5.716*** (0.651)	5.660*** (0.625)
Observations	271	271	271	271	271
Prob > F	0.8007	0.0010	0.0265	0.0364	0.0375
R-squared	0.0020	0.0590	0.0635	0.0654	0.0651
Adjusted R-squared	0.0058	0.0484	0.0349	0.0332	0.0329

Note: OLS model; standard deviation in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A-4 – Regressions of the number of illegal offer choices with €7 fine.

VARIABLES	(1) <i>C_{illegal}</i>	(2) <i>C_{illegal}</i>	(3) <i>C_{illegal}</i>	(4) <i>C_{illegal}</i>	(5) <i>C_{illegal}</i>
Free-Fine 17 Treatment	Ref.	Ref.	Ref.	Ref.	Ref.
Recent-Small-Fine 17 Treatment	-1.018*** (0.224)	-1.082*** (0.225)	-1.133*** (0.222)	-1.120*** (0.224)	-1.045*** (0.226)
Recent-Large-Fine 17 Treatment	-1.170*** (0.225)	-1.221*** (0.225)	-1.202*** (0.220)	-1.195*** (0.221)	-1.180*** (0.225)
Risk attitude		-0.0966* (0.0495)	-0.124** (0.0498)	-0.123** (0.0500)	-0.101** (0.0504)
<i>Socio-demographic variables</i>					
Student			0.193 (0.265)	0.189 (0.266)	0.212 (0.272)
18-24 yrs			Ref	Ref	Ref
25-30 yrs			0.172 (0.252)	0.176 (0.253)	0.249 (0.258)
31+ yrs			0.289 (0.342)	0.319 (0.349)	0.488 (0.358)
Female			-0.187 (0.180)	-0.184 (0.181)	-0.0834 (0.185)
<i>Level of movie consumption</i>					
Irrespective of channel			0.0783*** (0.0211)		
Illegal channels				0.0976** (0.0475)	0.102** (0.0494)
Legal channels				0.0712*** (0.0263)	
Hadopi					0.256 (0.194)
Constant	1.491*** (0.158)	2.113*** (0.355)	1.470*** (0.481)	1.447*** (0.485)	1.488*** (0.501)
Observations	170	170	170	170	170
Prob > F	0.000	0.000	0.000	0.000	0.000
R-squared	0.1613	0.1802	0.2501	0.2511	0.2251
Adjusted R-squared	0.1513	0.1654	0.2129	0.2090	0.1815

Note: OLS model; standard deviation in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A-5 – Regressions of the number of illegal offer choices with movie cut-off.

VARIABLES	(1) $C_{illegal}$	(2) $C_{illegal}$	(3) $C_{illegal}$	(4) $C_{illegal}$	(5) $C_{illegal}$
Free-Cut-off Treatment	Ref.	Ref.	Ref.	Ref.	Ref.
Recent-Small-Cut-off Treatment	-6.020*** (0.584)	-6.036*** (0.595)	-5.978*** (0.604)	-6.061*** (0.599)	-6.027*** (0.624)
Recent-Large-Cut-off Treatment	-5.099*** (0.579)	-5.112*** (0.587)	-5.069*** (0.611)	-5.084*** (0.605)	-4.997*** (0.620)
Risk attitude		-0.0234 (0.143)	-0.0605 (0.146)	-0.0393 (0.145)	-0.0335 (0.149)
<i>Socio-demographic variables</i>					
Student			-0.518 (0.713)	-0.659 (0.709)	-0.639 (0.728)
18-24 yrs			Ref	Ref	Ref
25-30 yrs			-0.308 (0.580)	-0.392 (0.576)	-0.290 (0.597)
31+ yrs			0.266 (1.051)	-0.174 (1.066)	0.703 (1.094)
Female			-0.0375 (0.494)	-0.186 (0.496)	-0.0119 (0.509)
<i>Level of movie consumption</i>					
Irrespective of channel			0.0916* (0.0523)		
Illegal channels				-0.146 (0.136)	-0.0287 (0.132)
Legal channels				0.185** (0.0719)	
Hadopi					0.341 (0.541)
Constant	7.877*** (0.360)	8.029*** (0.996)	7.920*** (1.356)	8.152*** (1.348)	8.522*** (1.381)
Observations	128	128	128	128	128
Prob > F	0.000	0.000	0.000	0.000	0.000
R-squared	0.5171	0.5172	0.5381	0.5515	0.5278
Adjusted R-squared	0.5094	0.5055	0.5070	0.5173	0.4918

Note: OLS model; standard deviation in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix B: Instructions for the *Recent 36* treatment

Experiment 2

Experiment 2 is composed of two main phases. During Phase 1, you will answer questions about catalogs of movies. During Phase 2, you will watch one of the movies from the chosen catalog in the laboratory. The movie you watch will depend on your answers to the questions in Phase 1. Therefore, it is important to answer carefully.

1. Phase 1

Phase 1 is composed of 3 steps.

- At Step 1, you will choose a movie genre. You will then have access to two catalogs of movies from the genre chosen at this step.
- At Step 2, you will discover the characteristics of the two movie catalogs, and choose one catalog.
- At Step 3, you will discover the movies in the catalog chosen at Step 2. You will then select one movie that you would like to watch during Phase 2 of the experiment.

Your choices during Phase 1 will therefore have an effect on the movie you watch.

Let's take a closer look at how the different steps of Phase 1 unfold:

During **Step 1**, you must choose a movie genre from the following 4 genres:

- Action/adventure
- Comedy
- Drama/dramatic comedy
- Thriller/crime /spy

The movie catalogs proposed in the course of this experiment will be from the movie genre chosen during this step. In other words, your choice will determine the genre of movie that you will watch in Phase 2. It is therefore important to choose your genre carefully.

Note that no matter which movie genre you choose during this phase, the average runtime of movies (in minutes) and the average quality of movies (in terms of Audience Ratings on AlloCiné) are identical in each of the catalogs proposed later in the experiment.

During **Step 2**, you must fill in the table below.

In each line of the table, you must compare two options (A and B). Both options contain a catalog of 4 movies of the genre you chose in Phase 1. The characteristics of the catalogs are different depending on the option:

Characteristics of Option A:

1. This catalog contains recent movies released in theaters less than 10 months ago.
2. Watching a movie from this catalog could lead to a fine of 9 euros, which will be deducted from your initial allowance of 40 euros.

Characteristics of Option B:

1. This catalog contains less recent movies, released in theaters more than 36 months ago.
2. Watching movies from this catalog will not expose you to a fine.

Note that at this stage of the experiment, you do not know the titles of the movies. However, you do know that the movies offered in the two options (A and B) are different. In other words, your choice in this second stage must be based on the catalogs' characteristics.

This is the table you must fill in during the second step. For each of the table's lines, note whether you prefer Option A or Option B:

Décision n°	Option A	Option B	Choix d'option	
			Option A	Option B
1	4 films récents (moins de 10 mois) 1 chance sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
2	4 films récents (moins de 10 mois) 2 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
3	4 films récents (moins de 10 mois) 3 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
4	4 films récents (moins de 10 mois) 4 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
5	4 films récents (moins de 10 mois) 5 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
6	4 films récents (moins de 10 mois) 6 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
7	4 films récents (moins de 10 mois) 7 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
8	4 films récents (moins de 10 mois) 8 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
9	4 films récents (moins de 10 mois) 9 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>
10	4 films récents (moins de 10 mois) 10 chances sur 10 d'être exposé à une amende de 9 euros	4 films moins récents (plus de 36 mois) Aucune chance d'être exposé à une amende	<input type="radio"/>	<input type="radio"/>

Your choices will have an impact on the rest of the experiment and on your payoff. It is therefore important to answer according to your preferences.

How to fill in the chart according to your preferences

Example 1: If on Line 1, you choose Option A, this means that you prefer a catalog of 4 recent movies released in theaters less than 10 months ago, but watching them exposes you to a 1-in-10 chance of a 9-euro fine (Option A) rather than choosing a catalog of less recent movies (released in theaters more than 36 months ago), but watching them does not expose you to a fine (Option B).

Example 2: If on Line 3, you choose Option B, this means that you prefer a catalog of 4 less-recent movies (released more than 36 months ago) but watching them does not expose you to a fine (Option B) rather than choosing a catalog of recent movies (released less than 10 months ago), but watching them exposes you to a 3-in-10 chance of a 9-euro fine (Option A).

At the end of Step 2, the computer program will randomly select one of the lines of the table. The randomly selected line will then be applied for the rest of the experiment. Each line of the table has the same probability of being selected.

What are the implications of the random selection?

Example 1: Supposing that on Line 1, you chose Option A and that Line 1 was randomly selected.

- This means that, later in the experiment, you will have access to a catalog of 4 recent movies, and there is a 1-in-10 chance that you will be fined.
- To determine whether or not you will be fined, the computer program will make a second random selection: a number between 1 and 10.
 - o If the randomly selected number is 1, a 9-euro fine will be deducted from your allowance of 40 euros.
 - o If the randomly selected number is between 2 and 10, you will not be fined.

Example 2: Supposing that on Line 2, you chose Option A, and that Line 2 is randomly selected.

- This means that, later in the experiment, you will have access to a catalog of 4 recent movies, and there is a 2-in-10 chance that you will be fined.
- To determine whether or not you will be fined, the computer program will make a second random selection: a number between 1 and 10.
 - o If the randomly selected number is 1 or 2, a 9-euro fine will be deducted from your allowance of 40 euros.
 - o If the randomly selected number is between 3 and 10, you will not be fined.

Example 3: Supposing that on Line 3, you chose Option B, and that Line 3 was randomly selected.

- This means that, later in the experiment, you will have access to a catalog of 4 less-recent movies (more 36 months old) and that you will not be fined for watching these movies.

On the next screen, you will find out the result of the first random selection: the randomly selected line as well as your choice for this line (Option A or Option B).

If, for the randomly selected line, you chose Option A, the computer program performs a second random selection to determine whether or not you will be fined. However, you will not learn the result of the second random selection until the end of the experiment.

In **Step 3**, you will find out the movies from the catalog you have access to. For each movie, you will be given the following information:

- The title of the movie;
- The names of the director and main actors;
- The theatrical release date;
- The movie's runtime;
- The Allo Ciné audience rating;
- The plot;
- The versions available (for foreign movies, two versions are often available: the French version and the original version with French subtitles).

Note that **the dates of the movies' theatrical release depend on your choice** for the randomly selected line:

- If you chose Option A, the theatrical release dates will be less than 10 months ago.

- If you chose Option B, the theatrical release dates will be more than 36 months ago.

Once you have found out which movies you have access to, you must choose the movie that you would like to watch in Phase 2.

2. Phase 2

Once Phase 1 has been completed, Phase 2 of the experiment is conducted. During Phase 2, you will watch the movie you chose in the previous step. The duration of Phase 2 corresponds to the duration of this movie. **You must therefore wait for the duration of the movie to access the rest of the experiment and your payment.**

The computer program is blocked on this movie.

If there is a problem, please raise your hand; we will come and help.

3. Payoff for Experiment 2

After Phase 2, your payoff for Experiment 2 will be displayed. It is calculated as follows:

- If for the randomly selected line in the chart you had chosen Option A, your payoff will depend on the second random selection (a number between 1 and 10).
 - If this random selection exposes you to a fine, your payoff is:
Payoff = Initial allowance – fine = 40 – 9 = 31 euros
 - If this random selection does not expose you to a fine, your payoff is:
Payoff = Initial allowance = 40 euros
- If for the randomly selected line, you had chosen Option B, your payoff is:
Payoff = Initial allowance = 40 euros

After this phase, Experiment 2 is over. Your final payoff for the session will comprise this payoff in addition to your payoff from Experiment 1.

To validate your payoff, you must answer a questionnaire. Once you have filled out the questionnaire, the experimental session is finished.

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If you have any questions about what you have just read, please raise your hand. We will come

Summary of Experiment 2

Phase 1:

- Step 1: Choice of movie genre
- Step 2: Finding out the characteristics of the two movie catalogs, choice of options and random selection of one of your choices
- Step 3: Finding out the movies of the catalog you can access, and choice of movie :
 - o If for the randomly selected line, you chose Option A : recent movies (less than 10 months)
 - o If for the randomly selected line, you chose Option B : less-recent movies (more than 36 months)

Phase 2:

- Watching the movie chosen at Step 3.

Calculating your payoff:

After watching the movie, your payoff for Experiment 2 will be displayed:

- If for the randomly selected line you chose Option A, you will learn the result of the second random selection (a number between 1 and 10).
 - If this random selection exposes you to a fine, your payoff is:
$$\text{Payoff} = \text{Initial allowance} - \text{fine} = 40 - 9 = 31 \text{ euros}$$
 - If this random selection does not expose you to a fine, your payoff is:
$$\text{Payoff} = \text{Initial allowance} = 40 \text{ euros}$$
- If for the randomly selected line, you chose Option B, your payoff is:
$$\text{Payoff} = \text{Initial allowance} = 40 \text{ euros}$$