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Incentivising 'pirates' to pay – An experiment with comic book readers

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ABSTRACT

Internet piracy has been repeatedly shown to displace the authorised consumption of digital content. However, fewer studies tried to identify a viable solution and even less tried to convert the 'pirates' into paying consumers. We conducted a three-wave panel survey among comic book readers, asking about their consumption from various sources. After each wave, a random subsample was provided with prizes in the form of digital comic books from a legal provider. We analyse the effects of prizes on further consumption behaviour. The first prizing scheme incentivised setting up an account, installing a reader app and familiarising oneself with the catalogue of the dominant digital seller of comics. The second scheme aimed at hooking consumers on particular comic book series. However, we only find small evidence of a change in the consumption patterns or the willingness to pay for digital formats. We suggest that for the case of comic books, the prices of lower-valued digital copies might deter purchase. Furthermore, we discuss the use of similar research design for other creative content.

1. Introduction

Piracy remains a continued concern across the creative sectors. The recent years have seen the emergence of the largest anti-piracy alliance within the audiovisual industry (The Alliance for Creativity and Entertainment – ACE), and increasing struggles of the sports broadcasters with illegal streaming. Indeed, most studies find a negative effect of piracy on sales, despite the growing availability of authorised providers.

Most of the existing literature on how to effectively prevent piracy focuses on restrictions or punishments. Notably, as many of the so-called pirates also remain heavy purchasers, the key question is not only how to reduce piracy but also how to convert it into paid consumption. For that matter, several studies have focused on the analysis of policy responses such as increased enforcement and punishment (Danaher et al., 2014) or removing access to unauthorised content (Danaher et al., 2016; Tanaka, 2016). However, not much has been done on the topic of positive incentives aimed at increasing the allure of legal channels.

Building on economic theory we propose two directions for incentivising paid consumption. First, for those with no experience with legal channels, switching costs can present barriers toward paid consumption. These may take the form of the setup costs (registration, installing apps, etc.) or learning costs (e.g. the interface or managing a digital library).

Second, recurring consumption from a source could support building loyalty to a legal provider and contribute to habit formation.

We explore these two approaches within the context of comic books. The market has several advantages for this purpose. First, it is defined by high-frequency consumption of interconnected goods, linked by stable levels of quality (e.g. within comics series and franchises). Second, the goods are relatively cheap with one comic book issue priced at 3-4 dollars[2], and both the print and digital versions priced at the same initial levels. Third, the comic book market is characterised by high consumption of print comics and seemingly high piracy. However, the digital sales remain relatively unpopular. Fourth, the digital market is dominated by one provider – Amazon-owned ComiXology – with a broad range of titles from most publishers. As such the choice of the paid source of comic books for the study becomes straightforward.

We conducted a three-wave monthly panel survey among comic book readers, asking about their consumption choices. For each month we have learned about the consumption from paid print, paid digital and unpaid digital sources for a set of 50 bestselling titles from the preceding month. After each wave, a random sample of respondents received prizes constituting Treatment 1 or Treatment 2. Treatment 1 occurred after each of the waves. The winners were asked to pick digital titles from the ComiXology store, for the total amount of 10 EUR and send the

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titles by e-mail. They were subsequently gifted the indicated comic books. In total, they had to: browse through the store, look at the prices and catalogue and then later register and install the reader app to read the prize. Treatment 2 was conducted after the second wave. A sample of respondents received a comic book issue chosen for them, which constituted a first issue in a series that they have not previously read. Treatment 2 aimed at hooking the readers on a new title.

We have used the acquired information to test for changes in the numbers of paid and unpaid acquisitions, of switches from paid to unpaid digital acquisitions (and vice versa) mid-series, of starting new series from a paid or unpaid digital source and in the willingness to pay for digital copies. For Treatment 2 we have tested for a change in the probability of picking up the follow-up issue to the one gifted. The estimated relationships suggest a small negative change in unpaid consumption and a small positive in the paid consumption, but the results were not statistically significant for most cases. Moreover, while Treatment 2 increased the chances of picking up the follow-up to the gifted titles, it mainly did so through unpaid sources. We conclude that the implemented incentive schemes might not have been enough for the case of the comic book market and discuss implementing similar research design for other creative sectors.

2. Literature review

Economic theory proposes several mechanisms that could affect consumers' consumption patterns. The two strands relevant for this research paper consider the role of barriers for consumption in the form of switching costs and habit formation. Both of these mechanisms suggest that incentivising a change in consumption behaviour could carry long-lasting effects.

Switching costs constitute "one-time costs facing the buyer of switching from one supplier's product to another's" (Porter, 1980). The theory proposes that these kinds of costs act as barriers towards different suppliers (Klemperer, 1987; Burnham et al., 2003), which in more extreme cases could even discourage a change to a higher-utility provider. At the same time, this means that even temporary incentives towards overcoming these barriers could lead to permanent flows between providers.

Switching costs can result from the characteristics of the potential alternative, the relationship with the incumbent provider, or personal costs associated with the switching process (Klemperer, 1995; Burnham et al., 2003; Hess and Ricart, 2003). The potential alternative might necessitate time spent on learning and setup or involve uncertainty risks. Transactions with the incumbent provider might involve loyalty and benefit programs, incurred investments or developed relationships. Finally, the switching process itself might involve a search and evaluation period that, depending on the good, might require considerable time costs. Taking the broad range of the costs into consideration, Burnham et al. (2003) categorise them as procedural, financial or relational.

Digitization brought the discussion on switching costs to the context of uniform information goods in different release formats. For example, the e-book format provides innovative features for reading but requires purchasing a reader device, learning, foregoing relationships with bookstores and other one-time costs (Huang and Hsieh, 2012) covering all three of the types described by Burnham et al. (2003). Interestingly, Huang and Hsieh (2012) found that only the procedural and relational switching costs had an effect on readers' e-book acceptance.

Taking this discussion one step further, one might consider switching costs in markets with illegal digital distribution in the form of online piracy. Hardy (2020) considered such context, noting additional risks related to the unauthorised providers (e.g. malware or legal risks) that might require more learning, further search costs or setup of protection (e.g. VPN) to mitigate. On the other hand, overcoming switching costs related to the legal providers might be key to converting unauthorised users to paying consumers. Luo and Mortimer (2021) show that this is

the case for firms licensing digital images who were more likely to take up legal alternatives once they have been informed about them (i.e. the search and evaluation costs were taken care of by the researchers).

Interventions aimed at overcoming switching costs can also be considered in the light of the literature on habit formation. The theory of rational addiction (Becker and Murphy, 1988) defines habitual behaviour that links past and current consumptions. Similarly to the effects of one time incentives to incur the switching costs, a present incentive aimed at igniting a particular consumption behaviour may increase future utility from this behaviour and establish a perpetual habit (Becker and Murphy, 1988; Gneezy et al., 2011; Ito, Ida and Tanaka, 2018).

In prior studies, these incentives often take the form of free samples or trial periods. As Bawa and Shoemaker (2004) note, free samples could boost product consumption, but they could also displace it. The displacement could be explained by an earlier purchase displacing a later one, but also by satiation (i.e. the consumer no longer needs the full product) or even resignation (if the sample quality proved too low – Foubert and Gijsbrechts, 2016). In the context of IDTV customers, Foubert and Gisjbrechts (2016) find that the positive effects of free trials prevail and can be linked to no setup fees of free trials and what they call an "inertia premium" that incentivises simply continuing from free to paid subscriptions. A net positive effect of free trials seems intuitive in light of it being a common access option across different services.

The continuation of offered service or product is often studied in the context of habit formation. These studies propose that incentivising a particular behaviour change for enough time can contribute to long-lasting changes in consumption due to shifts in habits. Charness and Gneezy (2009) found that providing people with gym access and membership can lead to long-term uptake of exercising. Yet, Royer et al. (2015) find that once the incentive period ends the difference becomes very small. They do note that commitment contracts can overcome this issue.

In the context of digital goods and piracy, giveaways and free trials have been considered as a way of getting the 'pirates' acquainted with the qualities and advantages of a legitimate source (Hill, 2007). One reason for that is that free samples could then replace 'piracy' as the way of reducing the uncertainty of quality, while simultaneously getting the consumers to learn more about the legal options. In this context, Godinho de Matos et al. (2017) gifted randomly selected households access to an SVoD platform and noted both increased TV consumption and reduced pirated content downloading. However, such a giveaway did not affect a household's general probability of accessing pirated content.

Summarizing the literature on switching costs and habit formation, we consider one-time incentives for legal consumption as a promising way of converting 'pirates' into paying consumers. In the context of digital comic books, giveaways could overcome a range of switching costs associated with the legal sources, most notably the various procedural costs: learning how to use reader apps and services, learning about the range of the catalogue, setting up the account and reader app. The giveaways could also contribute to habit formation by incentivizing reading series of titles within the reader app over a period of time.

3. Hypotheses

In this study, we analyse the consumption of comic books in three formats – paid printed, paid digital and unpaid digital (illegal, pirated copies). Interestingly, unlike other types of media and entertainment, readers have not embraced the paid digital format of comic books to a large extent. As the printed format is the most popular, followed by pirated copies, we consider switching costs as a barrier to accepting the

legal digital alternative. It is worth noting, that using the major digital comic book provider – ComiXology – presents a number of benefits when compared to reading unpaid digital comic book formats. ComiXology[3] is a user-friendly reader app which allows for adjusting the view of comic books to the screen size and facilitates moving between comic books' frames. Furthermore, the app keeps track of users' progress in reading, builds their digital library, gives recommendations for next titles and allows for offline reading. The comics are also released on time, without any delays from the printed format premiere. In contrast, unpaid digital comic books take the form of static images on pages (not allowing for configuring any view features), can be released with delays, require Internet connection and frequently show pop-up advertisements, for example when moving to the next page. Hence, although easily accessible and free, reading pirated comic books is less convenient, not mentioning breaking the law and the associated stigma. Regardless of ComiXology's benefits, however, users have to first incur the switching costs when willing to read legitimate online copies of comic books. Drawing from the literature review on switching costs and habit formation, we propose a set of hypotheses.

Building upon Luo and Mortimer (2021), we anticipate a straightforward effect of incurring the switching costs on the increase in the total utility from purchasing digital comic books. Combined with receiving a giveaway, such an effect would translate into an increased propensity for buying digital copies, and a lower propensity for acquiring the unpaid versions. Thus:

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

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

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

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

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

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

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

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

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

H_4: Receiving a self-selected bundle of comics increased the willingness to pay for digital formats.

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

H_5: Receiving a previously unread digital comic book issue increases the chances of the reader acquiring (from any source) the follow-up.

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4. Experiment design

4.1. Data sample

Our data comes from an online survey of comic book readers conducted between February and April 2018 (please see Appendix B for the details on the questionnaire). The study consists of three, monthly waves conducted among more than 400 readers, with 157 participating in each of the three waves. The readers were asked about their comic book reading habits and recent acquisitions of the top, best-selling comic book issues. Most of the responders (app. 90%) were male and lived in the USA or other English-speaking countries. Close to 70% were aged between 18 and 34. Half of the responders read more than one title per week. Almost all previously purchased print comic books in a brick and mortar store, with 68% having purchased a digital comic book in the past and 50% from the ComiXology store. Almost 3 out of 4 responders have previously used unpaid sources. For more details on the respondents and dataset, see Hardy (2021).

The main module repeated in each of the three waves asked about consumption of 50 top-selling comic book issues released in a prior month. All considered titles comprised a short format (app. 24-36 pages per issue), with most coming from series spanning all three months. Thus, the whole study covered the consumption of 150 issues, coming from 46 comic book series from largest American publishers (Marvel – 51% of titles; DC – 42% and Image – 7%). Notably, the studied titles were released simultaneously in print and digital formats, with the same starting price for both types.

Each time, the responders were first asked about which comics they have read, and afterwards about how they acquired specific issues. Around half of the acquired titles had been purchased in a print form. About a fifth had been purchased in a digital format and a fifth acquired from an unpaid source (the remaining few were either borrowed or received through subscription). Importantly, since all the titles were relatively new, the 'unpaid' option was unanimous with so-called piracy (i.e. obtaining an unauthorised copy). However, we avoided the 'piracy' phrasing so as to not deter respondents from truthful answers.

As most of the titles came from comic series, it is possible to track how readers made consecutive decisions about its issues. Table 1 describes the within-series flows between different sources of the comic books. Once consumers start reading a series in a specific format, they are unlikely to switch the formats midway. In general, print comics readers change the mode of consumption of a comics series to digital (paid or unpaid) only in app. 4% of the cases. Paid digital comics readers change the mode of consumption to physical only in app. 6% cases and to unpaid digital only in app. 3% of the cases. Non-paying readers switch to any paid channels mid-series only in app. 7% of the cases. All three kinds of readers are more likely to stop reading a series than to switch channels of acquisition – print buyers stopped reading a series in 9% of cases, the digital buyers stopped in 12% of cases and the non-paying readers stopped reading a series in 15% of cases. These patterns also highlight that the role of piracy as a sampling strategy is non-existent or negligible. Importantly, the low within-series mobility between issues was only partially reflected in the overall source differentiation among the consumers. Around 31% of the responders did not buy any of the

Table 1
Within-series flows between formats of subsequent issues.

From	To Print	Digital (paid)	Unpaid	None
Print	86%	3%	1%	9%
Digital (paid)	6%	78%	3%	12%
Unpaid	3%	3%	78%	15%
None	1%	0%	1%	98%

Note: the columns do not always sum up to 100% due to a negligible share of flows to borrowing and subscription categories.

comics in the sample in a print form and around 39% of the responders only bought the print forms. However, the remaining 30% on average acquired 20% of their comics in a paid digital format and 17% in an unpaid digital format. This suggests that a significant share of consumers read different series in different formats and stick to those formats with subsequent issues.

In the second round the readers were asked about their valuation of the digital versions of 20 of the titles. The issues were divided into two 10-item sets, with each responder having to assess how much they would be willing to pay for each issue within the assigned set. The sets were constructed in a way to ensure as much heterogeneity in the titles as possible (e.g. the issues came from three publishers, had various issue numbers). The question has been asked regardless of whether the particular responder had read a specific title or how they had acquired it.

In general, those who have not read a specific title or read it in a print, or an unpaid format considered the paid digital version as of little value (see Table 2). Note that these evaluations happened after a consumption choice, which means that the observed values often represent the perception informed by the experience of the specific issues.

4.2. Treatment 1

To incentivise participation in subsequent parts of the study, each wave was concluded with a growing number of randomly assigned prizes. The rewards comprised digital comic books chosen by the winners, up to the total cost of 10€ at ComiXology, with 40 responders awarded in February, 50 in March and 90 in April.[4] The general process for the prizes comprised the following steps:

(1) A random subsample of the readers received an e-mail about the prize. The readers were asked to visit the online store ComiXology and to pick a set of titles with the total price not exceeding 10€.
(2) The readers would then search the store, pick an appropriate set of comics on offer and send a list of the titles they would like to receive. They had two days to do this.
(3) We then purchased the specified titles as gift purchases.
(4) Finally, to read the acquired comics the winner had to install the ComiXology app and register.

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

Table 2
Valuations of the digital comic books, by actual source of acquisition.

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

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

of responders was drawn and awarded instead. They were, again, given two days to reply with a set of comic books.

In the end, we sent 85, 73 and 142 prize notifications over the three rounds, respectively, which means we had to draw app. 2.1, 1.5 and 1.6 people per prize when giving rewards. The non-responsiveness of some of the initial winners could have resulted from two reasons. First, some of the readers considered the digital issues as inferior or even worthless. Indeed, four of the winners answered directly that they participated in the study to support the research but that they had no need for the digital issues. Second, it is possible that some of the recipients had a mail spam filter that prevented them from receiving the notifications about the prizes. This risk results from the fact that there was no prior e-mail history between the researchers and the participants (the participants were first recruited through online forums) and e-mails about prizes and winning often comprise scams.[5] To reduce the risks of such outcome, the following steps were taken:

(1) The text of the e-mail has been verified against lists of popular spam words found online.
(2) The e-mail has been run against available online spam checking services (e.g. http://isnotspam.com/). These services provide data on the effectiveness of the mailing in terms of which services accepted the e-mails, as well as provide scores for different aspects of the mail. The mail notifications were thus edited for optimal efficiency. The final text of the e-mail can be found in Appendix A.
(3) The e-mails were sent interchangeably from three e-mail addresses, with one connected to the authors' university, one connected to a scientific foundation that one of the authors worked in, and one private one. All three e-mail addresses had prior history (and were thus less likely to include spam).
(4) The reminder about the prize was much shorter and included only some of the original information. It instead referred to the original e-mail about the prize (see Appendix A). It also usually came from a different e-mail address than the original notification.

On the one hand, if some of the prize e-mails went to spam, forcing us to pick different winners, it should not affect the effectiveness of the treatment. This effect would likely occur at random, which does not affect the assumption of a random treatment assignment. On the other hand, if some of the readers ignored the e-mails purposefully, we could expect some selection bias. However, the key reason for not wanting a prize would be for a reader to consider the prize as worthless or incompatible with reading preferences. As such, this would make the readers with a higher potential for being converted overrepresented in the treatment group (i.e. those with no chances of reading paid digital comics underrepresented). In turn, should a problem of this sort arise, we would expect the estimate of the relationship between the treatment and higher paid consumption to be positively biased. As shown in Section 3, this does not seem to be the case.

Receiving a reward in the form of comic book issues constitutes Treatment 1 of this study. Due to its design, Treatment 1 necessitated that the readers browse ComiXology, familiarise themselves with the prices and the catalogue, register and install the necessary reader app. As such, the treatment required from the readers to incur particular switching costs associated with the digital service. Potentially, it could have also contributed to some form of a loyalty increase.

4.3. Treatment 2

Additionally, a separate random draw of 50 participants in March

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[4] A typical, new comic book issue is priced between $1.99 and $3.99 (as of 2018). Older comic books might be priced lower and are sometimes sold with a discount.

[5] Notably, the study participants contributed their e-mail addresses voluntarily as means of contact about prizes and subsequent study waves.

received a comic book of our own choice. All of the awarded issues were the first issues of new, best-selling series and were chosen from the sample of comics that particular readers marked as unread. These comics issues ranged in price from 2.69€ to 4.49€.

The second kind of prizes constitutes Treatment 2. By design, Treatment 2 aimed to hook the responders on particular new series of comic books. In the third wave of the survey, the responders were additionally asked about whether they have actually read the provided comic books.

5. Results

5.1. Treatment 1

Based on the Treatment 1 design, four scenarios can be discerned. In Scenario 0, a person did not receive a prize after any of the first two rounds. In Scenario 1, a person received a prize after the first round but not after the second. In Scenario 2, a person received a prize after the second round but not after the first. In Scenario 3, a person received a prize both after the first and second rounds.

The effects of specific scenarios can be tested by comparing the choices in rounds 2 and 3. In all cases Scenario 0 will constitute a part of the Control Group. Additionally, Scenario 2 constitutes a part of the Control Group for the analysis of the effects of Scenario 1 in Round 2. Otherwise, the results are always compared against the Scenario 0.

Tables 3–6. comprise regression analyses of the effects of specific scenarios. In line with the previously defined hypotheses, the following dependent variables are considered:

- Total paid digital and total unpaid consumption (Table 3.),
- Number of switches from paid digital to unpaid or the other way around, mid-series (Table 4.),
- Number of times a new series was picked in paid digital or unpaid formats (Table 5.)
- Willingness to pay for digital formats (Table 6.).

In all our analyses (except for the willingness to pay for digital formats), we introduce the total consumption of issues in a particular format from the first round to control for any potential selection bias for accepting prizes. We denote it as the *Lagged consumption* variable. For the analysis of Scenario 1 and Scenario 3 in round 3, the values from round 1 were used (double lags).

Looking only at the coefficients, the results in Table 3. suggest that the prize recipients increased their paid digital consumption and lowered the unpaid consumption. However, most of the results are not statistically significant. This is likely the result of a relatively low number of the prize recipients. Notably, winning in the first round or twice had a negative effect on total unpaid consumption with a 10% significance. Such winning is associated with a 0.8 decrease in the consumption of illegal digital comic books (See Table 3., *Round 3*). Therefore, although we may not confirm Hypothesis 1A, we find evidence for Hypothesis 1B - *Receiving a self-selected bundle of comics decreases the subsequent consumption of unpaid digital comics*.

Receiving the prize does not carry a significant effect on switching from the unpaid versions to paid digital versions mid-series (See Table 4., *Digital*). Hence, we cannot confirm Hypothesis 2A. Regarding Hypothesis 2B, we only find weak evidence for the negative relationship between winning after the 1st round and subsequent switching from the paid versions to unpaid digital versions mid-series (see Table 4., *Round 2, Unpaid*). The effect loses its significance in Round 3. The lagged dependent variable is dropped in some specifications due to insufficient variance in the variable. This is because observing switching requires looking at lagged within-series consumption (which contributes to missing information for the first observed issues in the sample) combined with low numbers of digital consumption and switching between paid and unpaid digital.

The results for the number of times a new series was picked in paid digital or unpaid formats are inconsistent and mostly insignificant. Although we find a negative effect of the prizes on both legal and illegal digital consumption of new series (See Table 5., *Round 3*), the results are only weakly significant (at the 10% level) and do not hold in each model specification. Hence, such results do not allow for confirming Hypothesis 3A nor 3B.

We find no significant effect of winning a prize on the willingness to pay for digital formats of comic books (see Table 6.). It seems that getting acquainted with the chosen content on the ComiXology service does not affect the monetary valuation of digital formats (hence we do not find support for Hypothesis 4).

5.2. Treatment 2

We test the effects of Treatment 2 by analysing whether readers were more likely to purchase the follow-ups to the comic books they have received as a prize. Three groups can be discerned here: those who have not purchased or received the issues in question, those who have purchased these issues by themselves and those who received the issues as a prize. As analysing the Treatment 2 effect makes sense only for those who would not have purchased the comic books otherwise, we compare the winners only with those who have not acquired the issue in any form. Table 7. includes logistic regressions on the probability of purchasing a follow-up issue to those in the prize pool. In the first row, the explaining variable is defined as receiving the prequel as a prize. In the second row, the explaining variable is defined as receiving the prequel as a prize AND having read it (based on a question from the third round of the survey).

We find no statistically significant effect of Treatment 2 on purchase decisions for sequels of the gifted comic book (see Table 7., *Prequel as a prize*). However, when controlling for whether the gifted title was read, the coefficient for unpaid acquisition of the subsequent issue becomes larger and statistically significant at a 5% level (see Table 7., *Prequel as a prize and read*). This suggests, that while some of the prize winners were successfully incentivised to pick up a comic book series, they were most inclined to use the pirate sources to do so.

Table 3
Effects of prizes on total consumption (digital paid or unpaid) in the second and third rounds of the survey.

| | Round 2 Winning after 1st round (Scenario 1) | | Round 3 Winning after 1st round (Scenario 1) | | Winning after 2nd round (Scenario 2) | | Winning twice (Scenario 3) | |
	Digital	Unpaid	Digital	Unpaid	Digital	Unpaid	Digital	Unpaid
Winning	0.43	-0.41	0.38	-0.82*	0.49	-0.61	0.53	-0.80*
	(0.54)	(0.31)	(0.65)	(0.45)	(0.37)	(0.54)	(0.82)	(0.43)
Lagged consumption	Yes	Yes	Double	Double	Yes	Yes	Double	Double
Observations	201	201	140	140	130	130	125	125
R²	0.64	0.55	0.65	0.40	0.89	0.62	0.60	0.39

Note: robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. For the analysis of Winning after 1st round and Winning twice (Round 3), the values of consumption from Round 1 were used (double lags). All regressions calculated using Ordinary Least Squares.

Table 4

Effects of prizes on the number of switches from unpaid to paid digital or the other way around (mid-series) in the second and third rounds of the survey

	Round 2 Winning after 1st round (Scenario 1)		Round 3 Winning after 1st round (Scenario 1)		Winning after 2nd round (Scenario 2)		Winning twice (Scenario 3)	
	Digital	Unpaid	Digital	Unpaid	Digital	Unpaid	Digital	Unpaid
Winning	-0.04	-0.09*	-0.08	-0.09	0.02	-0.11	-0.08	-0.09
	(0.05)	(0.05)	(0.06)	(0.06)	(0.12)	(0.08)	(0.06)	(0.06)
Lagged consumption	Omitted	Yes	Omitted	Double	Yes	Yes	Omitted	Double
Observations	201	201	140	140	130	130	125	125
R^2	0.00	0.05	0.00	0.00	0.01	0.02	0.00	0.00

Note: robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$. For the analysis of Winning after 1st round and Winning twice (Round 3), the values of consumption from Round 1 were used (double lags). All regressions calculated using Ordinary Least Squares.

Table 5

Effects of prizes on the number of times a new series was picked in paid digital or unpaid formats in the second and third rounds of the survey.

	Round 2 Winning after 1st round (Scenario 1)		Round 3 Winning after 1st round (Scenario 1)		Winning after 2nd round (Scenario 2)		Winning twice (Scenario 3)	
	Digital	Unpaid	Digital	Unpaid	Digital	Unpaid	Digital	Unpaid
Winning	0.01	-0.06	-0.06**	-0.04*	-0.01	0.02	0.07	0.09
	(0.08)	(0.05)	(0.03)	(0.02)	(0.02)	(0.06)	(0.09)	(0.12)
Lagged consumption	Yes	Yes	Double	Double	Yes	Yes	Double	Double
Observations	201	201	140	140	130	130	125	125
R^2	0.60	0.44	0.23	0.01	0.50	0.11	0.27	0.01

Note: robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$. For the analysis of Winning after 1st round and Winning twice (Round 3), the values of consumption from Round 1 were used (double lags). All regressions calculated using Ordinary Least Squares.

Table 6

Effect of prizes on the willingness to pay for digital formats in the second round of the survey.

	Round 2 Winning after 1st round (Scenario 1)
	Digital
Winning	-0.02
	(0.10)
Lagged consumption	No
Observations	199
R^2	0.00

Note: robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$. All regressions calculated using Ordinary Least Squares.

Table 7

Logistic regressions of acquisitions on receiving the prequel as a prize.

Regression on:	Acquisition Any format		Print		Digital	Unpaid	
Prequel as a prize	1.82	(1.04)	2.24	(2.43)	No follow-ups	2.74	(1.80)
Prequel as a prize and read	1.65	(1.12)	No follow-ups		No follow-ups	3.96**	(2.64)
Observations	815						
Responders	156						

Note: Standard errors clustered at individual level in parentheses. ** $p < 0.05$. Each row represents results from separate regressions. None of the Treatment 2 winners purchased the sequel in a digital format and none of those who read the prize purchased the sequel in a print format.

6. Conclusions

Majority of comic book readers read comic book issues in a print format. Contrary to what has happened in other creative sectors, the digital formats are much less popular. Moreover, even within the digital formats, unpaid sources seem highly popular, in some populations rivalling the paid digital consumption. In this context, it is interesting to see how this market structure is moderated by switching costs associated with the legal digital consumption.

In particular, reading a digital comic book from the main digital seller ComiXology, requires learning, registration, app installation and configuration. As digital formats are priced on par with print formats at release, these factors might constitute significant switching costs that prevent the readers from using the paid digital sources. At the same time, unpaid sources require only a quick search in Google and whole comic books can be read in regular web browsers.

In our paper, we test whether overcoming the switching costs can permanently change consumption choices of the comic book readers. Our Treatment 1 provides digital comic book prizes that require from the winners to familiarise themselves with the catalogue and offer of the market-dominating online store ComiXology. They then had to register and install an appropriate app to read the acquired comics. Finally, as the prizes comprised several titles (or few large ones), the reading could contribute to habit formation, potentially also affecting further choices. In Treatment 2 we deliberately awarded the responders with comic books they have not acquired themselves to track whether they have afterwards read the subsequent issues. This study is among the first to experimentally test the importance of switching costs in a setting where physical, paid digital and unpaid digital formats compete for the same set of readers.

We have tested for several possible effects, described in hypotheses 1 to 5. These included a change in general consumption levels from paid and unpaid sources, a change in switching from paid to unpaid digital sources mid-series (and the other way around), changes in starting new series in a paid or unpaid digital format, change in willingness to pay for digital formats and chances of acquiring the sequel to the gifted comic book title.

Despite the wide range of considered effects, we found limited evidence of a consistent change in behaviour of the consumer sample. Our results suggest a small negative change in unpaid consumption and a small positive in the paid consumption, but the results were not always statistically significant. Moreover, while Treatment 2 increased the chances of picking up the follow-up to the gifted titles, it mainly did so through unpaid sources. The other hypotheses were not confirmed.

In contrast to Luo and Mortimer's (2021) results, we do not find consistent evidence of the effect of incurring switching costs on

subsequent consumption behaviour. We thus conclude that the switching costs associated with digital formats cannot explain the unique nature of the American comic book market. One clue towards the low interest in paid digital formats is that readers tend to consider digital comic books inferior in nature, similar to what Berger et al. (2015) found for newspapers. As such, they are willing to pay less for digital formats, which is reflected in digital copies' value-to-price ratios predominantly scoring below 1. This contrasts with the price level of digital formats that matches the print versions at release. Our results suggest that incurring switching costs does not offset enough the perceived lower value of digital comic books.

The inherent quality and accessibility of digital formats does not seem to explain the results. The case of Japanese manga indicates that the issue might be more about the consumer culture than the format itself. Even at their peak during 2020 (the year of the COVID-19 pandemic) the digital formats in the US constituted an estimated 12.5% of the comic book market (Miller, 2021). Meanwhile, in Japan the sales of the digital format have overtaken print already in 2017 (Japan Times, 2018). The difference also does not seem to originate from the quality of reader apps, as the major apps for the American-style comics (ComiXology by Amazon, Marvel Unlimited) seem to average similar (or better) scores at the Google Play store to the major manga-reading apps (e.g. MANGA Plus, VIZ Manga)[6]. Instead, the differences seem driven by an entirely different consumer culture – Tanaka (2016) notes, the share of comic book market within the whole book market in Japan equalled app. 36%, but only app. 3% in the USA at the time of his study.[7]

Another interpretation of the results is that the value of print formats is boosted by collector value, which is absent from the digital versions (see e.g. Steirer 2014). The collecting aspect of comic books has been emphasised by Woo (2012) who categorised comic collectors as hobbyists, completists or speculators. Tankel and Murphy (1998) surveyed a small group of comics store visitors noting that they invested both in the comic books and items for collection curation. Moreover, Woo (2011) proposes that brick and mortar stores fulfil the role of social hubs (a trait absent from digital transactions), which could also elevate the value of print comics. Digital copies in that case could serve as reading material, but not as collection pieces.

Finally, it is possible that the readers started using the digital store for titles that did not constitute recent top-selling titles. Instead they focused on older titles or discounted ones, including story collections on the then-relevant story arcs.[8] It is thus likely that the readers are more likely to purchase digital issues of the series that are long out-of-print and/or once the digital versions become cheaper than the print ones (e.g. due to discounts). For such cases, overcoming the switching costs could have carried stronger effects. Indeed, the winners mainly picked non-current titles for their prizes, with only 17% claimed releases from 2018, app. 25% from 2017 and 22% from before 2010.

Notably, this finding also suggests that our responders did not substitute their consumption of new, top-selling titles with the prizes. The majority in our sample claimed a high frequency of reading at least one comic issue per week. As such, we do not expect for the prizes to push out consumption of other titles through time constraints. Moreover, in

our three-month observation period we noted 64 cases of winning readers not acquiring a follow-up issue to a series they have been reading, but none of these non-acquisitions matched with their requested prizes.

To the best of our knowledge, this study is among the first to directly test the effects of cultural giveaways in an experimental setting with a clearly defined control group. While we have not found consistent effects for comic books, future studies could utilise similar approaches for other types of cultural participation (e.g. movies, music or museum visits). Moreover, future studies should consider both immediate and long-run effects of such incentives, as habits may form over longer spans of time.

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[6] As of August 2021, ComiXology and Marvel Unlimited are scored 3.8 and 4.6, respectively. MANGA Plus (of the Shueisha publisher), VIZ Manga (of the VIZ Media publisher) or the apps of Kadokawa and Shogakukan publishers are scored 3.9, 3.6, 3.3 and 3.6.

[7] Europe represents yet another market with a differing consumer culture and dominated with the Franco-Belgian comics. According to the scarce available statistics, comics accounted for app. 12.5% of all books in France (MacDonald, 2015), while the digital sales represented about 1% of the market (Cultural Services French Embassy in the United States, 2015).

[8] For example, after the last survey some responders asked for the at-the-time discounted Marvel comics collection *Thanos* (priced at €9.99) about the main villain of the blockbuster movie *Avengers: Infinity War* – premiering in the cinemas in that month.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.infoecopol.2023.101045.

Appendix A - e-mails about prizes[9]

Dear Participant!

In the last few days you have filled in a questionnaire about comic book readership. It is now my pleasure to tell you that you and 39 other responders will receive digital comic books of your choice.

To receive them, please make note of the following:

- You have until Thursday to indicate the set of comics you'd like to get. If you miss this date, I will regrettably not be able to send you the comics.
- Visit Comixology.eu and choose a set of titles that you would like to receive. Once you do so, please send an e-mail to: <e-mail address>, with the full list.
- The total cost should not exceed 10 euro. If you pick the titles in the ComiXology.com version (with USD currency), please note that the USD/Euro relationship does not necessarily reflect actual exchange rates. I will have to check if the titles are within the 10 Euro boundary anyway.
- If the total cost of your set exceeds the 10 euro (either because of an error, or e.g. because a discount has ended), I will have to remove something from the set so that the cost is below 10 euro again.
- You don't have to spend whole 10 euros, but you won't be able to use up the rest if you don't.
- The titles have to be currently available for purchase (you can't pick something that is not released yet, even if it will soon be).
- You will receive your titles within the next two working days.

If you have any questions, please e-mail me at this address: <e-mail address> . You can also view the terms & conditions again here <link>.

Once again, thank you for your participation!

In March we will run a second wave of this study – we will be most grateful if you take part in it as well.

Kind regards,

Reminder:

Dear Sir/Madam,

please note that you have app. 24-48 h left to specify the comic books that you'd like to receive.

If you have not received the previous e-mail with specifications, please check if it wasn't accidentally filtered. I CC the e-mail address that I've used to send the notifications.

Kind regards,

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[9] As previously noted some of the wording used in the e-mails was specifically chosen to avoid the e-mails getting marked as spam (e.g. use of the words "prize", "reward" or "win" was avoided).

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