COMPETING WITH FREE: THE EFFECT OF POST-RELEASE MOVIE PIRACY ON BOX-OFFICE REVENUE

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ABSTRACT

The availability of digital distribution channels raises many new challenges for managers in the media industries. This is particularly true for movie studios where content can be stolen and released through illegitimate digital distribution channels before, or shortly after, the legitimate release date. In response to this potential threat, movie studios have spent millions of dollars attempting to protect their content from unauthorized release, to prosecute those who might distribute or consume pirated content, and to lobby governments to strengthen anti-piracy laws.

However, there has been very little rigorous research to analyze whether, and how much, movie piracy cannibalizes legitimate box-office sales. In this paper, we analyze this question in the context of post-release movie piracy. We also consider whether going to the movies is substitutable by watching a pirated version at home. Even though there is a lag between the release in cinema-theaters and a DVD-release (that is when a pirated copy of a good quality is made available), we consider making decision at the certain moment, so time lag does not make any difference.

Our study contributes to the growing literature on piracy and digital media consumption in the online community by presenting evidence of the impact of digital piracy, by differentiating the effect of post-release movie piracy from the other types of piracy that the extant literature has previously considered.

Keywords: Movies, Box office revenue, Digital piracy

INTRODUCTION

In general, digital technologies and the Internet have deeply changed the interactions between copyright holders and consumers, thereby posing interesting challenges for the economic analysis of digital products.

Over the last two decades, the fast penetration of the Internet and the digitalization of information products (music, movies, games, books and software) have led to an increasing number of consumers, who copy and distribute information products without the authorization of their legal owners, to a phenomenon known as «digital piracy». Content industries (record companies, motion picture studios, software developers, publishing houses, etc.) were quick to blame digital piracy for huge revenue losses and to take legal actions against file-sharing technologies and, consequently, their users. Policy makers also reacted by gradually reinforcing

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copyright law. Recently, foreign governments and the World Trade Organization have been pushing Russia hard to start respecting intellectual property rights.

Online piracy is one of the most significant current discussions in digital economics (recent years have seen both an explosion of piracy activity over the Internet and a related swell in research on piracy), and the reason for it is its ambiguity: Internet networks provide copyright holders with new sales and promotional channels for their content, while also providing consumers with new opportunities to (illegally) obtain free copies of this content.

On the one hand, digital networks can create new and lower cost channels for studios to promote, sell and distribute their content to paying customers. Having high speed Internet access might allow consumers to collect and exchange more information about movies they are interested in, might allow experience that would not have been possible in real life and might offer producers a more targeted channel to promote movies of interest to consumers.

On the other hand, digital networks could harm movie studios economically. For example, broadband Internet access could create new entertainment outlets for consumers, crowding out the time they would have spent watching movies. For example, in-home entertainment can result in decreased cinema-theater attendance. In addition to «crowding out» effects, digital networks create new opportunities for users to illegally obtain free copies of movies through file sharing. Digital networks represent a disruptive technology, with the potential to create or destroy economic value in established industries.

Probably some of the most important managerial questions for movie studios relate to forecasting a movie's box-office sales, timing release dates and effectively directing promotion for movies prior to release. These questions have been widely studied in the marketing and information systems literatures and have become established parts of movie studio practice. In the face of these important decisions, movie piracy is seen as an increasing threat to both the studio revenue and content protection policies.

However, there has been very little rigorous research to analyze whether, and how much, movie piracy cannibalizes legitimate box-office sales. In this paper, we analyze this question in the context of post-release movie piracy. The purpose of this research is to examine the effect of post-release digital piracy on box-office revenues (copyright-holders' profits).

Hopefully, our study contributes to the growing literature on piracy and digital media consumption in the online community by presenting evidence of the impact of post-release digital piracy. Hopefully, our research contributes to the literature by addressing this question: whether going to the movies is substitutable by watching a pirated version at home.

BACKGROUND: THEORY AND RELEVANT LITERATURE

The causes of digital piracy

To understand the causes of piracy we need to look at the behaviour of individual consumers and ask why they knowingly consume pirated goods; and the nature of digital goods, that might enhance feelings of inequity, digital goods lack material substance, their largely intangible nature makes it more difficult for the mind to grasp that this is indeed valuable property. Digital piracy is nothing more than the theft of intellectual property. While the amount stolen by each individual might be quite small, when added together the figures are obviously very significant amount around $50 billion a year. What is particularly striking about digital piracy is that many of those committing the crime would not dream of walking into a store and shoplifting an item of similar value. Thus any discussion of piracy by consumers should consider why piracy is so high in the case of digital goods, as opposed to physical goods. Three theoretical perspectives prove useful in framing a discussion of the causes of digital piracy and helping to answer this question: work on moral development (Kohlberg, 1969), equity theory (Adams, 1963; Kabanoff, 1991) and moral intensity (Jones, 1991).

Consequences of piracy

The implied message so far has been that piracy harms copyright holders. However, the reality is more complex. In certain circumstances, piracy can benefit a copyright holder by speeding up diffusion of a digital good, by keeping competitors at bay, and by locking a product in as a standard. There is a number of ways in which piracy might grow demand for a digital good (Conner & Rumelt, 1991; Haruvy, Mahajan, & Prasad, 2004).

First, it has been suggested piracy can be seen as a form of product sampling, and that sampling can aid in the diffusion of a good (Gupta et al., 2004; Rogers, 1983). The central argument is that many digital goods are experience goods, the value of which cannot be assessed without trying them. In the absence of legal samples, consumers may turn to pirated copies in order to evaluate the good and decide whether to make a legal purchasing decision. For example, a consumer might purchase a pirated copy of Microsoft Office, and finding that the product offers desirable features and functions, purchase a legal copy when the next generation upgrade becomes available.

Second, piracy might have a beneficial effect on demand when strong network effects are operating in a market (Conner & Rumelt, 1991). Network effects are particularly important in the software industry. The value of owning some software products is an increasing function of the number of other people who own the same product. Again Microsoft Office is a case. The ability to swap files with other users of package creates value for owners of Office that is an increasing function of the number of other consumers in the network. This suggests that if piracy increases the size of the network, it can increase the value of owning a digital product and thus the demand for the legal product at each and every price.

Third, lock-in to a standard is enhanced when the switching costs to alternative technology are high. If the alternative lacks of a large network of users, and if there is an absence of complementary products, this will restrain switching to the alternative even if it is technologically superior to the existing standard. Switching costs are also high when adopters must invest time and effort in learning how to use the new technology. If piracy helps to increase the size of the network more rapidly, it can also help to reduce switching costs. This approach suggests that when a product is

competing with another for the industry standard status, it may pay to tolerate or even encourage piracy as a way of enhancing network effects, creating switching costs, and locking consumers in to a new product, making this switch more favourable.

Fourth, piracy can help lock in a copyright holder's product as an industry standard when the value of that product is contingent upon the supply of complementary products (this is a variant of the network argument). Computer operating systems, for example, work with software applications and hardware products. In this case, the greater the installed base of the operating system (the greater the size of the network), the greater the supply of complementary products that work with that operating system and thus the greater the value of owning the operating system (Arthur, 1989; Shapiro & Varian, 1999).

Thus, although piracy is considered to be a negative phenomenon, it can benefit not only a copyright holder by providing a bigger market share, but also a consumer, granting an alternative, ensuring competition and cutting prices. From this "benefitial" perspective, piracy in motion picture is examined rarely.

The result that piracy harms motion picture sales is consistent with most of the academic papers we are aware of. There are also several academic papers that find no evidence that piracy affects sales.

Apparently, substitution effect (if exists) makes it appealing to examine a) how the consumer's decision about the consumption of a movie product affects motion picture industry performance presented by box office and b) substitution effect (if it exists).

Piracy in Motion Picture
In the context of panel data, Zentner (2012) uses box-office revenue and home video sales (DVD and VHS) for 36 countries from 1998 to 2008 to analyze whether Internet penetration reduces motion picture sales. The author finds no statistical relationship between broadband penetration (as an inderect indicator of downloading activity) and box-office revenue (as an index for the business condition), but a strong negative relationship between broadband penetration and DVD sales.

Liebowitz and Zentner (2012) use panel data (Internet penetration, demographics, television viewership) to analyze whether broadband penetration reduces television viewership. Although that does not help measure directly the extent of piracy, the authors argue that broadband penetration represents an indirect measure of piracy as television content is quite popular among pirates as well as motion pictures. The results show that increased broadband Internet penetration has led to a reduction in television viewership among younger viewers.

Stepping down to the product-level data, Danaher and Waldfogel (2012) and Smith and Telang (2012) examine the influence of international release lags on sales. Danaher and Waldfogel use box-office data from July 2003 to July 2006 for the top 10 films in each year, covering 17 countries. They find that after the widespread expansion of BitTorrent, longer release windows between the U. S. and the international release date cause about a 1,3% drop in sales per week, or about a 7% drop per movie. Smith and Telang use a similar method, but focus on DVD sales. They use data from 2009 to 2011 for 7 countries, covering DVD sales levels for over

200 movies. They find that a one-week release delay between the first pirate source

and legitimate DVD release date is followed by a 2% reduction in DVD sales.

Concerning the surveys of consuner behaviour, Bounie, Bourreau and Waelbroeck (2006) use data on purchase activities and file sharing behavior within a sample of 620 French individuals and find out that file sharing has no statistically significant impact on theatrical attendance, but leads to a large drop in both video sales and video rentals.

Hennig-Thurau, Henning and Sattler (2007) used customers' reported intentions to analyze the impact of file sharing on motion picture sales and found that file-sharing resulted in considerable cannibalization of theater visits, DVD sales and rentals. Finally, Bai and Waldfogel (2009) used a survey of college students in China and discovered that 75% of Chinese movie consumption is supported by illegal channels. Also, according to the authors, each instance of illegal consumption displaces about 0,14 legal sales.

Rob and Waldfogel (2007) conducted a survey of 500 University of Pennsylvania undergraduates in the fall 2005. These students were shown the top 50 movies from each of the 3 previous years (150 in all) and then asked whether they saw the movie and what channel (pirated version, cinema, television, rental, DVD) they used to watch it. The authors found that illegal consumption of movies reduced legal consumption on almost a one-for-one basis (viewers did not stop watching movies at all, but switched to free pirated versions).

Since both panel and product-level data can not explain the preferences of an individual consumer, and the results provided by surveys can be damaged by response set of social desirability, experimental data also presents an important research material.

Another major methodology used in the academic literature to address the statistical problem of piracy is using natural experiments, where treatment is applied to one group of consumers (the treatment group) and where it is possible to find another group of similar consumers unaffected by this change (the control group).

In the context of natural experiments, Danaher et al. (2010) use NBC's decision to remove its content from iTunes store in September 2008. They find that piracy levels on NBC content have increased by 11,4% relative to ABC, CBS and FOX piracy, after the removal of NBC's content from iTunes. The authors also find that piracy rates on ABC, CBS and FOX content increased during this period as well, suggesting that NBC's decision to remove its content from iTunes have led to an increase in both NBC and non-NBC piracy as consumers have switched from iTunes to BitTorrent to obtain the television content they want. Martikainen uses BitTorrent download statistics from March to May 2009 and finds no evidence that higher rates of torrent sharing reduce DVD sales. However, this paper is unable to analyze digital sales.

The other academic paper that finds no damage from file sharing is Smith and Telang's (2009) paper analyzing how movie broadcasts on television stations influence the demand for a movie through legal (DVD) and illegal

channels. They find that movie broadcasts stimulate demand in both legal and illegal channels. They also find that at the time of broadcast the availability of pirated copies has no impact on increase in DVD sales. The authors also note that the results «do not speak to the impact of piracy in the earlier part of a movie's lifecycle, where the availability of pirated content may have a negative impact on sales[1]

Thus, there are several avenues through which post-release piracy can potentially impact box-office sales. The first, and most obvious, is substitution. If a would-be consumer has a chance to watch the pirated version of the movie after it is officially released, the consumers may be less likely to pay to watch it in the cinema theater. This substitution effect, if true, would suggest that post-release piracy should reduce box-office revenues.

Considering the upcoming literature review, three main hypotheses of our research should be tested.

Hypothesis #1: post-release piracy reduces movie box-office sales.

Obviously, not all pirated copies are of the same quality. The bad quality pirated copies may make   the consumers more likely to watch the official releases of the movies, thus boosting sales. On the contrary, a higher quality pirated version would perfectly substitute going to the movies. This leads to our second hypothesis:

Hypothesis #2: higher quality pirated versions will negatively impact movie box office sales.

Different consumers vary in their interest of post-release pirated versions. We consider a consumer facing a choice: to pirate or not to pirate. If a pirated version is not available, consumers would be more likely to go to the theaters.

Hypothesis #3: going to the movies is substitutable by watching a pirated version (of a high quality, for that matter) at home.

DATA COLLECTION AND ANALYSIS

We collect our data from four sources: IMDB.com and kinopoisk.ru (the former is an online database of all the information related to films, the latter - its Russian counterpart), kinokopilka.tv (a website that provides torrent files to facilitate peer-to-peer file sharing using the BitTorrent protocol) and boxofficemojo.com (a website thet tracks box office revenues)[2].

Our entire data set consists of 400 movies released within a three-year period between January 2010 and January 2013 as listed by Kinopoisk. We collect movie characteristics (i. e. variables) from both IMDB.com and kinopoisk.ru, including genre, budget, audience, awards, release dates, 3D, ratings, star power (presence of

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[1] Smith, M.D., Telang, R. Competing with Free: The Impact of Movie Broadcasts on DVD Sales and Internet Piracy // Management Information Systems Quarterly. – 2009. –№33 (2). – P. 336.
[2] All information is openly available on the Internet. Subscription may be needed.
Table 1: Description of Variables

stars in the cast), user reviews etc. We also use the Kinopoisk's data on box-office as a proxy for box-office revenues of the movies in our sample.

Our information about piracy activities (number of downloads, availability of high-quality version etc.) comes from the file-sharing website kinokopilka.tv based on the BitTorrent protocol.

Table 1 lists all the variables collected from these sources for our study. For each variable, we list the symbol and the information source, describe the information it represents and, if it is a derived variable, explain the method of calculation.

Table 1

EMPIRICAL STRATEGY AND RESULTS

To empirically test our hypotheses we model the box-office sales of movies and piracy rates while controlling for factors known to influence movie sales.

In an attempt to measure how piracy impacts sales we run the following regression:

$$\begin{cases} Y1i = X1ib1 + Y2iu12 + e1i \\ Y2i = X2ib2 + Y1iu21 + e2i \end{cases}$$

where *Y1i* and *Y2i* (regressands) represent box-office and piracy levels, *u12* and *u12* - their compatibility coefficients, *X* represents a matrix of explanatory variables, the impact of each variable would be given by the *b* coefficient.

The prior literature has shown that most movie characteristics included in our dataset impact motion picture industry performance. Therefore, we included in *X* all movie characteristics that are available to us. This includes genre, budget, audience, awards, release dates, 3D, ratings, star power (presence of stars in the cast), user reviews etc.

Figure 1: Movies/Audience/Number of Downloads

The figure shows that the major audience is formed by fantasy and fiction movies, animated films and action motions. The maximum load of downloads accounts for fantasy and fiction movies, action films (both as in the case of legal consumption) and dramas.

The regression analysis results are presented in Appendix A. All the significant results are presented in Table 2.

Table 2: Regression Analysis Results (Only Significant Results)

The results show that the global box-office and the availability of 3D both positively influence movie market potential. Movies with Mtv awards and high critic ratings do not have high market potential. Local box-office, IMDB rating, longer Blu-Ray release lag and the availability of high-quality pirated version have a positive impact on piracy levels, while longer DVD release lag undermines piracy rates.

In our simulation of an analytical model that describes the process consumers engage in when deciding to view a movie, we find that post-release piracy is not harmful to box office sales. Thus, using regression analysis we find no evidence that a movie's availability on BtTorrent reduces box office sales.

DISCUSSION AND CONCLUSION

The piracy of information goods and media products has important implications for managers - particularly in the context of revenue forecasts and advertising plans for movie releases. Using data collected from various websites hosting movie information, and combining this data with piracy information obtained from a unique Internet file-sharing site, we find out that post-release piracy does not reduce the movie's sales. Furthermore, it appears to be that the global box-office and the availability of 3D both positively influence movie market potential. Thus, a 3D movie does not need to be protected from illegal downloasing as, according to our results, its legal consumption is high enough, that allows reallocate the budget to raise awareness about the 3D technological pecularities.

Movies with Mtv awards and movies with high critic ratings do not have high market potential. The producers of the former ones can offer something extra to consumers who purchase the legitimate product: going to the movies should be accompanied by a digitalized promotion (QR codes, etc.) For the movies with high critic ratings, piracy is equivalent to sampling by consumers, a response by the copyright holder might be to develop a legal alternative that allows sampling legally. Local box-office, IMDB rating, longer Blu-Ray release lag and the availability of high-quality pirated version have a positive impact on piracy levels, while longer DVD release lag undermines piracy rates. For a copyright holder, these dicisions establish the strategy, cutting the variable costs.

Limitations of research
We also note some limitations of our study. The first limitation comes from the data. Post-release piracy rates we collect from kinokopilka.tv do not show the absolute intensity of downloads of the pirated copies. Moreover, the number of ways to consume a movie product is more than two (we consider only going to the movies and downloading the movie illegally, while it is possible to rent a movie, buy it online etc.)

Regarding the correlation among variables, it exists between certain awards and ratings, but it does not affect the results as the nature of this correlation is inevitable (e. g. festaval awards and critic rating). Meanwhile, variables with significant coefficients are not correlated.

Conclusion
As an Internet penetration gathers pace, it is essential that digital consumer behaviour is changing among with technology. Ethical and technological barriers at every new stage of urbanization become less important for a didgital customer, that complicates strategic planning in industries where the product can be digitalized. In this case, strategic planning does not only concern market potential and box office revenues,

but also decisions regarding property rights protection.

This research concerns motion picture industry, where fierce debate exists today as piracy simultaneously has socially accepted negative consequences and positive impacts for the development of certain industries.

Our study finds no impact of post-release digital piracy, and contributes to the literature by addressing this question: whether going to the movies is substitutable by watching a pirated version at home by answering that it is not.

Attempting to model the substitutional consumption patterns, we find that substitution effect is not obvious, and it is up to consumer to make a decision while choosing a distribution channel based on movie product's features.

In turn, it creates challenges for producers ragarding the choice of production technologies, promotion channels, startegies and release.

A new trend is in prospect on a market, there are two segments, in essence, not competing with each other: traditinal channel (where cinema theatres and films producing companies resources are aimed to provide these services, and where serious property rights protection is necessary) and an alternative channel (where digital distribution channel becomes the main release channel).

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TABLES AND FIGURES

Table 1: Description of Variables

Variable	Description	Source
AWARDS_ACAD	Number of Oscars and Golden Globes taken together..	Kinopoisk.ru
AWARDS_MTV	Number of MTV awards.	Kinopoisk.ru
AWARDS_FEST	Number of festival awards (Berlin International Film Festival, Venice International Film Festival, Cannes International Film Festival).	Kinopoisk.ru
AWARDS_ETC	Number of other awards (Saturn Award, BAFTA Awards, etc.).	Kinopoisk.ru
AWARDS_ALL	Number of all awards.	Kinopoisk.ru IMDB.com
3D	A binary indicator of the presence of 3D.	Kinopoisk.ru
GENRE	The main genre of the movie.	Kinopoisk.ru
RELEASE DATE (RUSSIA)	The release date of the movie in Russia.	Kinopoisk.ru
RELEASE DATE (WORLD)	The release date of the movie globally (mostly - in the USA).	Kinopoisk.ru IMDB.com
DVD RELEASE	The DVD release date of the movie in Russia.	Kinopoisk.ru
BRD RELEASE	The DVD release date of the movie in Russia.	Kinopoisk.ru
RELEASE_DIFF	Number of days between RELEASE DATE (RUSSIA) and RELEASE DATE (WORLD).	
RELEASE_DVD_DIFF	Number of days between DVD RELEASE and RELEASE DATE (RUSSIA).	
RELEASE_BRD_DIFF	Number of days between BRD RELEASE and RELEASE DATE (RUSSIA).	
BOX-OFFICE (WORLD)	The box-office sales of a movie in a period in the World.	Kinopoisk.ru IMDB.com
BOX-OFFICE (RUSSIA)	The box-office sales of a movie in a period in Russia.	Kinopoisk.ru
AUDIENCE	Number of legal movie-goers.	Kinopoisk.ru
CRITIC RATING	The average critic rating of the movie.	Kinopoisk.ru
RATING (KINOPOISK)	The average movie rating posted by viewers on Kinopoisk.ru.	Kinopoisk.ru
RATING (IMDB)	The average movie rating posted by viewers on IMDB.com.	IMDB.com
BUDGET	The estimated production budget of the movie.	Kinopoisk.ru IMDB.com

STAR POWER	A binary indicator of the presence of stars in the cast of the movie. A movie is considered having a star if some of the top three actors/actresses have won an Oscar or a Golden Globe.	Kinopoisk.ru IMDB.com
TOP 250	A binary indicator of the presence of the movie in the Kinipoisk's Top-250 list.	Kinopoisk.ru
HD	Availability of high-quality (HD 720p or 1080p) version.	Kinokopilka.tv
DOWNLOADS	Number of illegal downloads.	Kinokopilka.tv
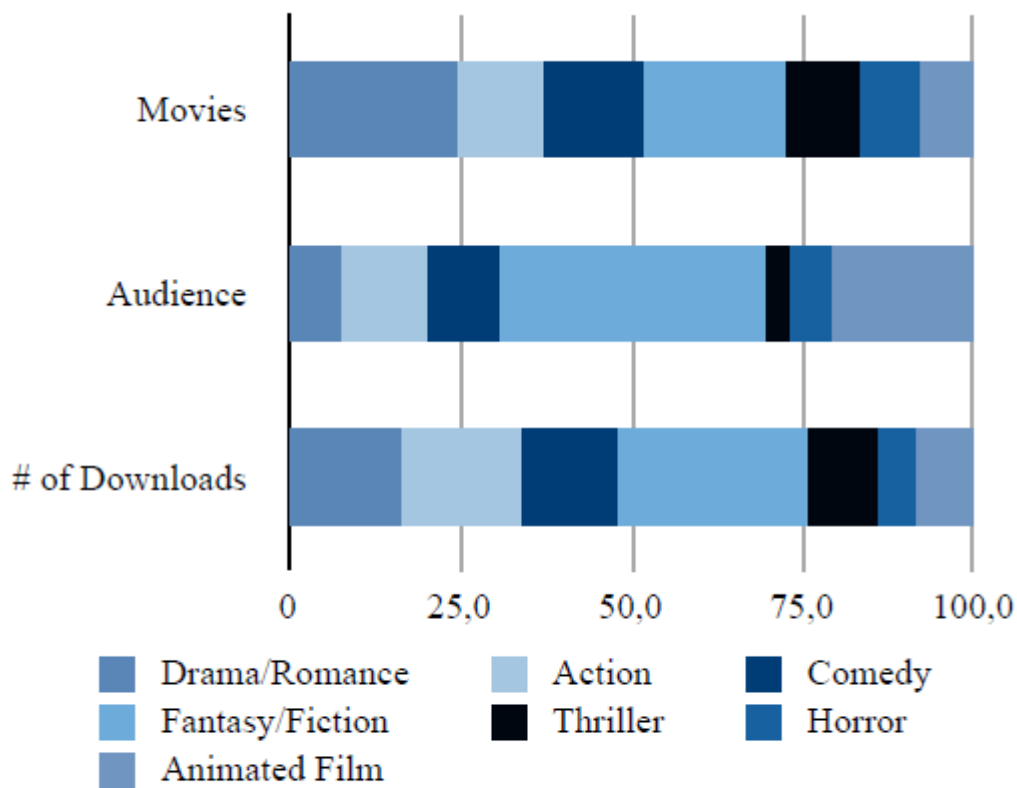
Figure 1: Movies/Audience/Number of Downloads

Table 2: Regression Analysis Results (Only Significant Results)

BOX-OFFICE (RUSSIA)

Parameter	Estimate/Coef
Awards_Mtv	-737286 (**)
Awards_Etc	-166280,3 (.)
3D	4752126 (***)
Box-Office (World)	0,0313617 (***)
Critic Rating	-32343,13 (*)

R-squared: 0,7651. P=0.

DOWNLOADS

Parameter	Estimate/Coef
Box-Office (Russia)	0,000464 (***)
Rating (IMDB)	2951,669 (***)
Release_DVD_Diff	-97,02245 (***)
Release_BRD_Diff	40,04797 (***)
HD	3377,841 (***)

R-squared: 0,4938. P=0.

The significance of the estimates are denoted by the following codes: <0,0001: «***», <0,001: «**», <0,01: «*», <0,05: «.».

Equation	Obs	Parms	RMSE	R-sq	chi2	P
BOX-OFFICE (RUSSIA)	400	18	4525005	0,7651	1299,36	0
DOWNLOADS	400	16	7919,143	0,4938	375,66	0

	Coef	Std Err	z	P>|z|	[95% Conf Interval]	
BOX-OFFICE (RUSSIA)						
DOWNLOADS	43,78148	57,36908	0,76	0,445	-68,65985	156,2228
AWARDS_ACAD	-45618,69	122492,6	-0,37	0,71	-285699,8	194462,4
AWARDS_MTV	-737286	218960	-3,37	0,001	-1166440	-308132,2
AWARDS_FEST	872523	522109,9	1,67	0,095	-150793,5	1895840
AWARDS_ETC	-166280,3	85348,58	-1,95	0,051	-333560,4	999,8461
3D	4752126	787620	6,03	0	3208419	6295833
GENRE						
Action	704603,6	1050999	0,67	0,503	-1355317	2764524
Comedy	587459,6	873107,7	0,67	0,501	-1123800	2298719
Fantasy/Fiction	2272352	948536,1	2,4	0,017	413255,8	4131449
Thriller	721453,6	927528,2	0,78	0,437	-1096468	2539375
Horror	1597517	1028659	1,55	0,12	-418616,4	3613651
Animated Film	926636,7	1206573	0,77	0,442	-1438204	3291477
RELEASE_DIFF	-2175,805	3383,292	-0,64	0,52	-8806,935	4455,325
BUDGET	-0,0001709	0,0070776	-0,02	0,981	-0,0140427	0,013701
BOX-OFFICE (WORLD)	0,0313617	0,0019923	15,74	0	0,027457	0,0352665
RATING (KINOPOISK)	372889,1	531493,8	0,7	0,483	-668819,5	1414598
CRITIC RATING	-32343,13	12736,25	-2,54	0,011	-57305,71	-7380,544
TOP 250	-2471366	1438012	-1,72	0,086	-5289818	347085,8
CONS	-1410734	3095099	-0,46	0,649	-7477017	4655550
DOWNLOADS						
BOX-OFFICE (RUSSIA)	0,000464	0,0000909	5,1	0	0,0002858	0,0006422
AWARDS_ACAD	6,334426	212,4452	0,03	0,976	-410,0504	422,7193
AWARDS_MTV	341,251	341,2091	1	0,317	-327,5066	1010,009
AWARDS_FEST	-1064,933	874,1301	-1,22	0,223	-2778,196	648,3309
AWARDS_ETC	-175,1543	140,9551	-1,24	0,214	-451,4212	101,1126
GENRE						

Action	8284,4	1460,946	5,67	0	5420,998	11147,8
Comedy	5644,392	1431,344	3,94	0	2839,009	8449,774
Fantasy/Fiction	4510,24	1462,802	3,08	0,002	1643,201	7377,278
Thriller	3358,537	1498,011	2,24	0,025	422,4883	6294,585
Horror	968,638	1656,37	0,58	0,559	-2277,789	4215,065
Animated Film	-641,1625	1988,15	-0,32	0,747	-4537,865	3255,54
RATING (IMDB)	2951,669	546,0299	5,41	0	1881,47	4021,868
RELEASE_DVD_DIFF	-97,02245	9,613041	-10,09	0	-115,8637	-78,18123
RELEASE_BRD_DIFF	40,04797	6,269499	6,39	0	27,75998	52,33596
BUDGET	0,0000225	0,0000123	1,82	0,068	-0,00000169	0,0000466
HD	3377,841	916,8449	3,68	0	1580,858	5174,824
CONS	-8862,944	3539,08	-2,5	0,012	-15799,41	-1926,475

APPENDIX B: Correlation Table

	AWARDS_ ACAD	AWARDS_ MTV	AWARDS_ FEST	AWARDS_ ETC	AWARDS_ ALL	3D
AWARDS_ACAD	1					
AWARDS_MTV	0,2807	1				
AWARDS_FEST	0,2762	-0,02	1			
AWARDS_ETC	0,7308	0,3104	0,323	1		
AWARDS_ALL	0,8789	0,4624	0,3582	0,9475	1	
3D	-0,0452	-0,0851	-0,0916	-0,0327	-0,0571	1
RELEASE_DIFF	0,2891	-0,0407	0,4061	0,271	0,2899	-0,2329
RELEASE_DVD_DIFF	-0,013	0,0552	-0,0809	0,0146	0,0082	0,238
RELEASE_BRD_DIFF	0,0151	0,0773	-0,0672	0	0,0146	0,0946
RATING (KINOPOISK)	0,3743	0,2043	0,1351	0,4507	0,4543	-0,107
RATING (IMDB)	0,4519	0,2794	0,237	0,5446	0,5592	-0,0712
STAR POWER	0,1783	-0,057	0,0227	0,1102	0,1245	-0,1202
CRITIC RATING	0,4429	0,2666	0,2698	0,4893	0,5226	-0,0065
TOP 250	0,3438	0,1654	0,0619	0,4626	0,4385	0,0131
HD	0,0442	0,1012	-0,0499	0,0913	0,0855	0,1871
BUDGET	0,0424	0,1197	-0,1486	0,1328	0,1065	0,4041

BOX-OFFICE (WORLD)	0,1635	0,4266	-0,1112	0,296	0,305	0,3728
BOX-OFFICE (RUSSIA)	-0,0415	0,1643	-0,1341	0,0546	0,0368	0,529
AUDIENCE	-0,0459	0,1861	-0,1404	0,0446	0,0325	0,4674
DOWNLOADS	0,0122	0,1992	-0,0974	0,0834	0,0826	0,0673

	RELEASE_ DIFF	RELEASE_ DVD_DIFF	RELEASE_ BRD_DIFF	RATING (KINOPOISK)	RATING (IMDB)	STAR POWER
AWARDS_ACAD						
AWARDS_MTV						
AWARDS_FEST						
AWARDS_ETC						
AWARDS_ALL						
3D						
RELEASE_DIFF	1					
RELEASE_DVD_DIFF	-0,2354	1				
RELEASE_BRD_DIFF	-0,2152	0,5093	1			
RATING (KINOPOISK)	0,155	0,1094	0,076	1		
RATING (IMDB)	0,2358	0,1131	0,0417	0,8734	1	
STAR POWER	0,0916	0,0627	0,0469	0,2209	0,1956	1
CRITIC RATING	0,2743	0,1271	0,0539	0,5686	0,8008	0,1418
TOP 250	0,1029	0,0426	-0,0338	0,3496	0,3222	0,0177
HD	-0,2146	0,2205	0,031	0,21	0,2209	0,04
BUDGET	-0,3483	0,3393	0,2017	0,2044	0,1575	0,1217
BOX-OFFICE (WORLD)	-0,2766	0,3129	0,1697	0,3253	0,2936	0,0303
BOX-OFFICE (RUSSIA)	-0,3358	0,2848	0,1508	0,1243	0,0674	-0,0457
AUDIENCE	-0,3504	0,2869	0,1738	0,135	0,064	-0,0563
DOWNLOADS	-0,2966	-0,1192	0,1447	0,3055	0,2177	0,0077

	CRITIC RATING	TOP 250	HD	BUDGET	BOX-OFFICE (WORLD)	BOX-OFFICE (RUSSIA)
AWARDS_ACAD						

AWARDS_MTV

AWARDS_FEST

AWARDS_ETC

AWARDS_ALL

3D

RELEASE_DIFF

RELEASE_DVD_D
IFF

RELEASE_BRD_DI
FF

RATING
(KINOPOISK)

RATING (IMDB)

STAR POWER

	CRITIC RATING	TOP 250	HD	BUDGET	BOX-OFFICE (WORLD)	BOX-OFFICE (RUSSIA)
CRITIC RATING	1					
TOP 250	0,2101	1				
HD	0,0755	0,0407	1			
BUDGET	0,0432	0,1214	0,335	1		
BOX-OFFICE (WORLD)	0,1975	0,2299	0,322	0,7476	1	
BOX-OFFICE (RUSSIA)	0,0004	0,0612	0,329	0,6844	0,8044	1
AUDIENCE	-0,0074	0,0545	0,322	0,6875	0,8072	0,9781
DOWNLOADS	0,0024	0,0551	0,294	0,4013	0,4398	0,4455

	AUDIENCE	DOWNLOADS
AWARDS_ACAD		
AWARDS_MTV		
AWARDS_FEST		
AWARDS_ETC		
AWARDS_ALL		
3D		
RELEASE_DIFF		
RELEASE_DVD_DIFF		
RELEASE_BRD_DIFF		

RATING (KINOPOISK)		
RATING (IMDB)		
STAR POWER		
CRITIC RATING		
TOP 250		
HD		
BUDGET		
BOX-OFFICE (WORLD)		
BOX-OFFICE (RUSSIA)		
AUDIENCE	1	
DOWNLOADS	0,481	1