Profiting From Piracy: A Measurement Study of the Economics of Cyberlockers

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Introduction

Cyberlockers, or one-click file-hosting services, are a new breed of online businesses which store users' files on remote servers and allow users to access files from any location. The number of cyberlockers has surged since 2006, likely as a function of lowered bandwidth costs and the ease with which cyberlocker services allow users to share copyrighted material like movies, music, applications, games, e-books, and adult content.
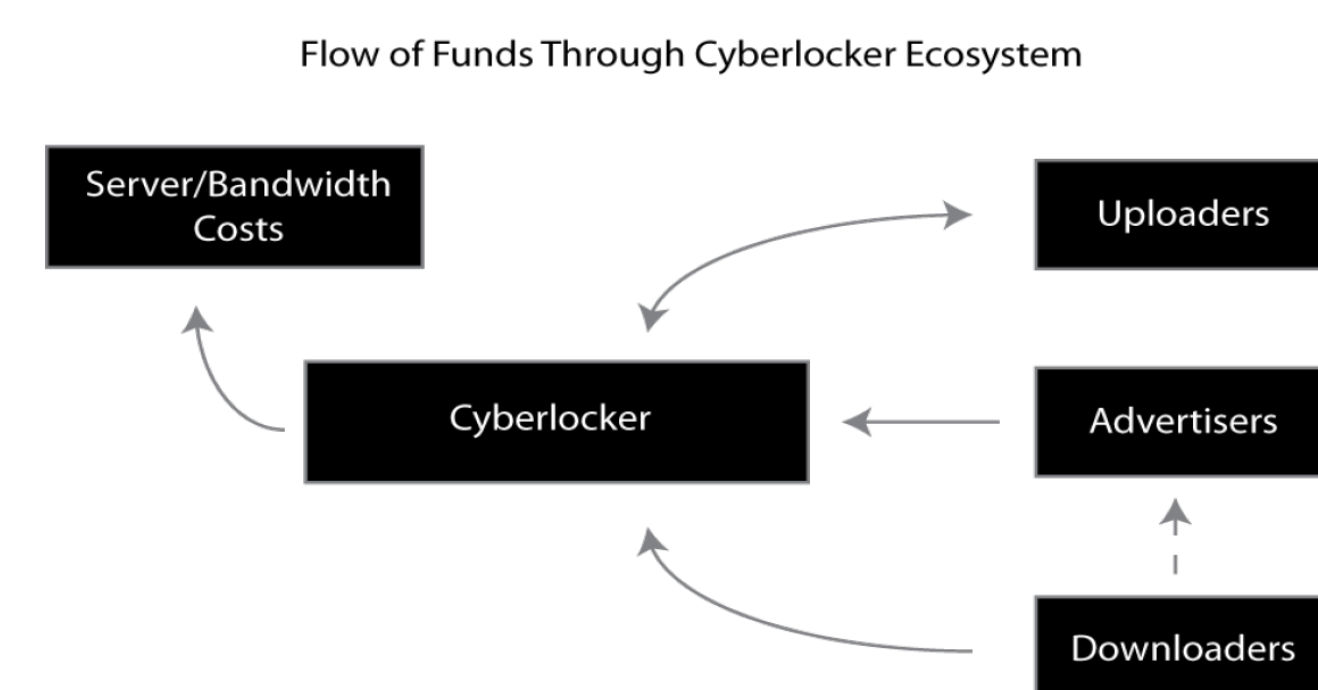
The primary competitor to cyberlockers in the file-sharing market is the peer-to-peer system BitTorrent.. There are a number of factors which could explain why file-sharing is a relatively more attractive proposition on cyberlockers.

- Privacy: A user's IP address is potentially identifiable on BitTorrent but the only parties who have access to a cyberlocker user's IP address are the cyberlocker and the user.
- Diversity: The variety and quantity of available files for download at any moment in time is considerably larger on the cyberlocker platform than on over BitTorrent.
- Speed: Cyberlocker downloads are on par with download speeds for BitTorrent and premium downloads are an order of magnitude faster.

In order for cyberlockers to become popular, they must entice uploaders to share their links. We examine the mechanism by which cyberlockers have been able to incentivize these uploaders.

The Cyberlocker Ecosystem

As businesses, cyberlockers earn revenue through advertising and the sale of premium accounts, the latter of which offers amenities to users such as greatly improved download speeds, elimination of wait-times, and extra storage space for files. The figure above show the flow of funds through the ecosystem.

Flow of Funds Through Cyberlocker Ecosystem

To attract uploaders, cyberlockers offer a variety of incentive plans which pay users who upload popular files or convert free users to premium members. The two most popular types of incentive programs are pay-per-download (PPD) and pay-per-sale (PPS). The first rewards uploaders by paying them an amount based on the number of times their files are downloaded, the location of the downloader, and the size of the file. The pay-per-sale incentive rewards an uploader a percentage of the sale price of a premium account every time a downloader chooses to buy an account after following an uploader's link to a cyberlocker. Our measurement results strongly suggest it is more valuable for uploaders to select PPS over PPD.

Pay-Per-Download as Follows:

Compensation for 1000 downloads

Size / Country*	A	B	C	D
1-50 MB	$7.00	$5.00	$2.00	$1.00
51-100 MB	$10.00	$7.00	$4.00	$2.00
101-250 MB	$16.00	$14.00	$8.00	$3.00
251-400 MB	$25.00	$19.00	$14.00	$4.00
401-1024 MB	$30.00	$23.00	$18.00	$6.00
1025+ MB	$35.00	$25.00	$20.00	$8.00

* Country Groups:
A. United States, United Kingdom, **Germany** NEW!
B. Australia, Austria, Belgium, Canada, Denmark, Finland, France, Ireland, Italy, **Japan** NEW!, Netherlands, New Zealand, Norway, Saudi Arabia, Singapore, Sweden, Switzerland, U.A.E
C. Brazil, Bulgaria, Cyprus, Czech Republic, Greece, Hungary, Iran, Kuwait, Latvia, Lithuania, Luxembourg, Poland, Portugal, Qatar, Romania, Russia, South Africa, Spain
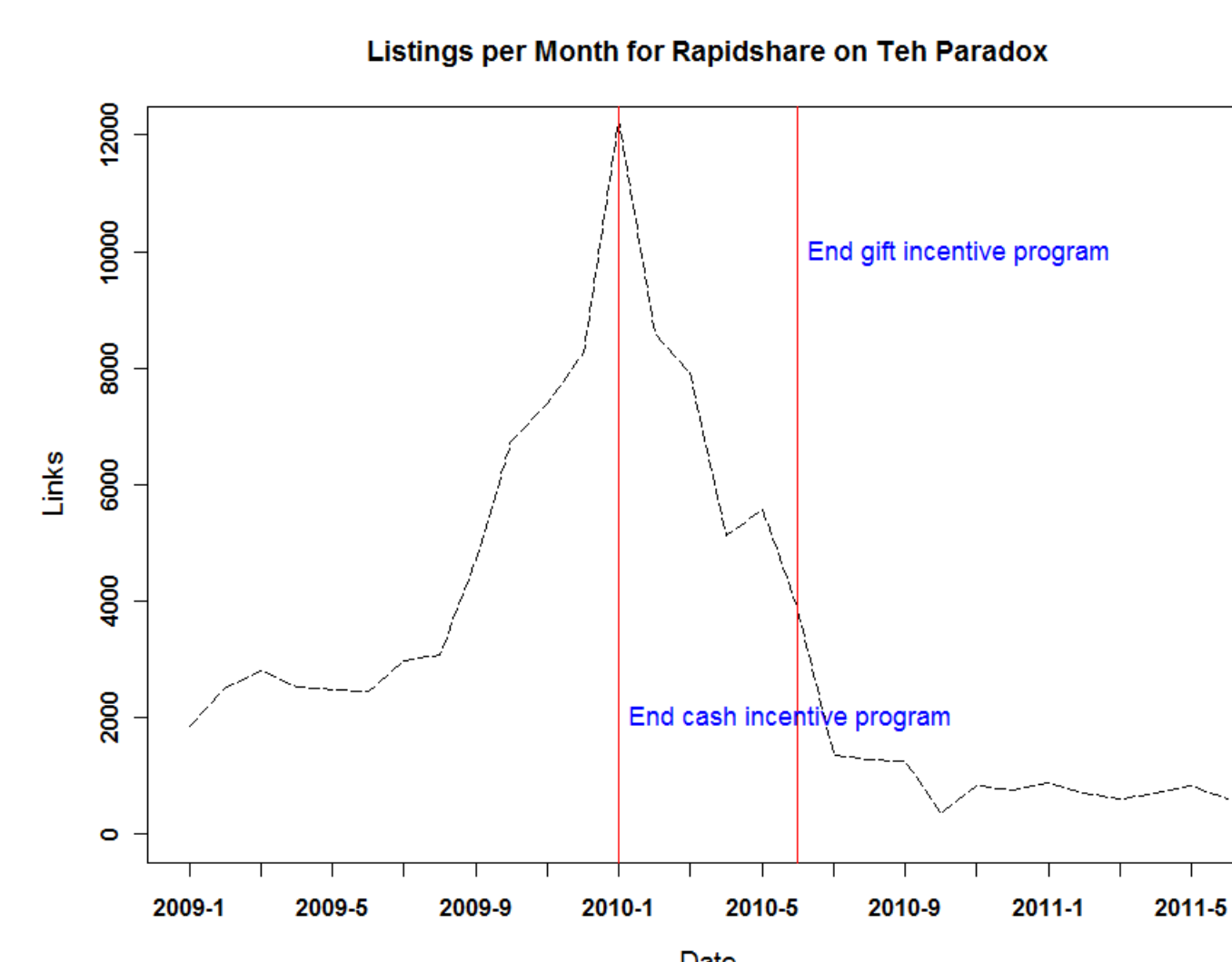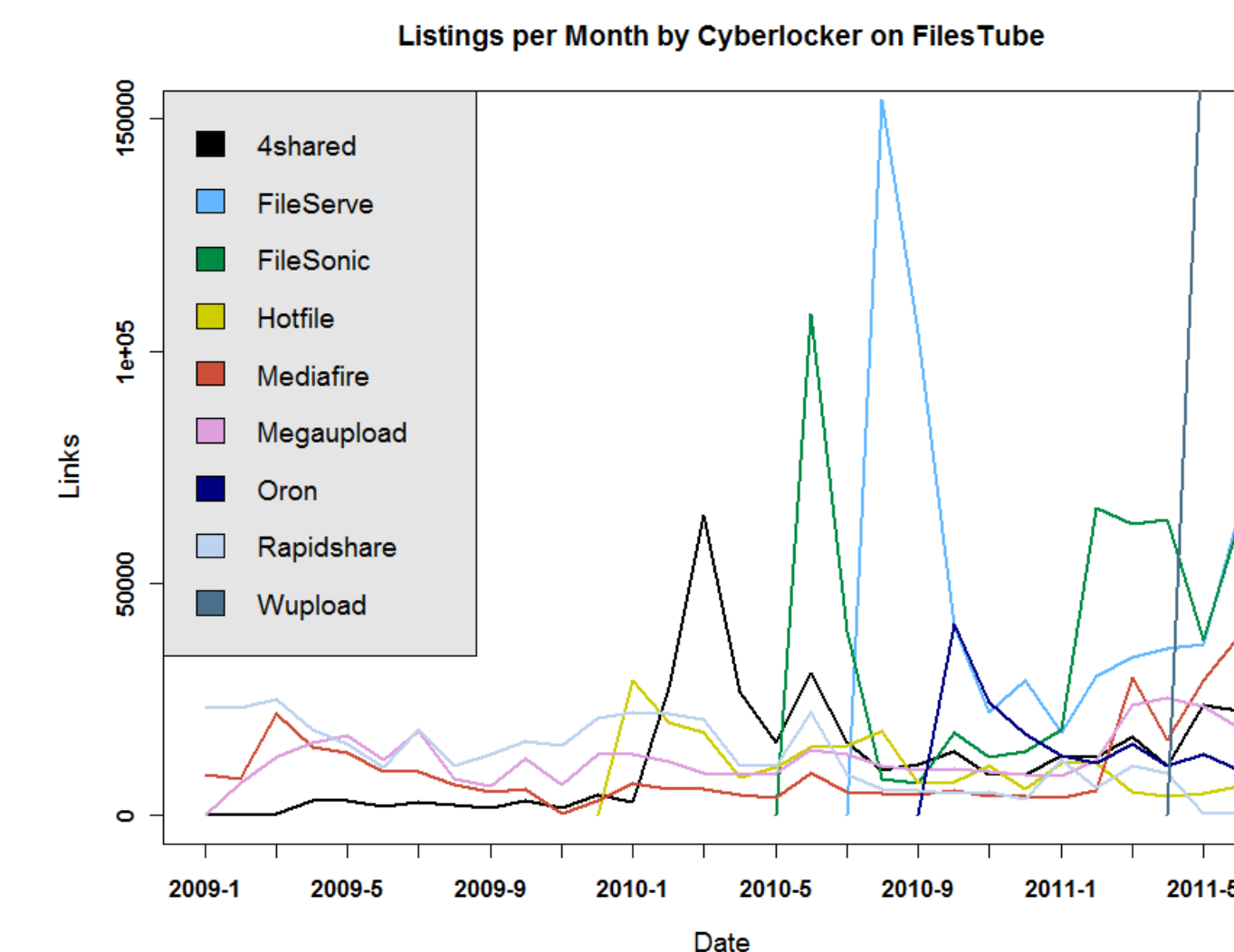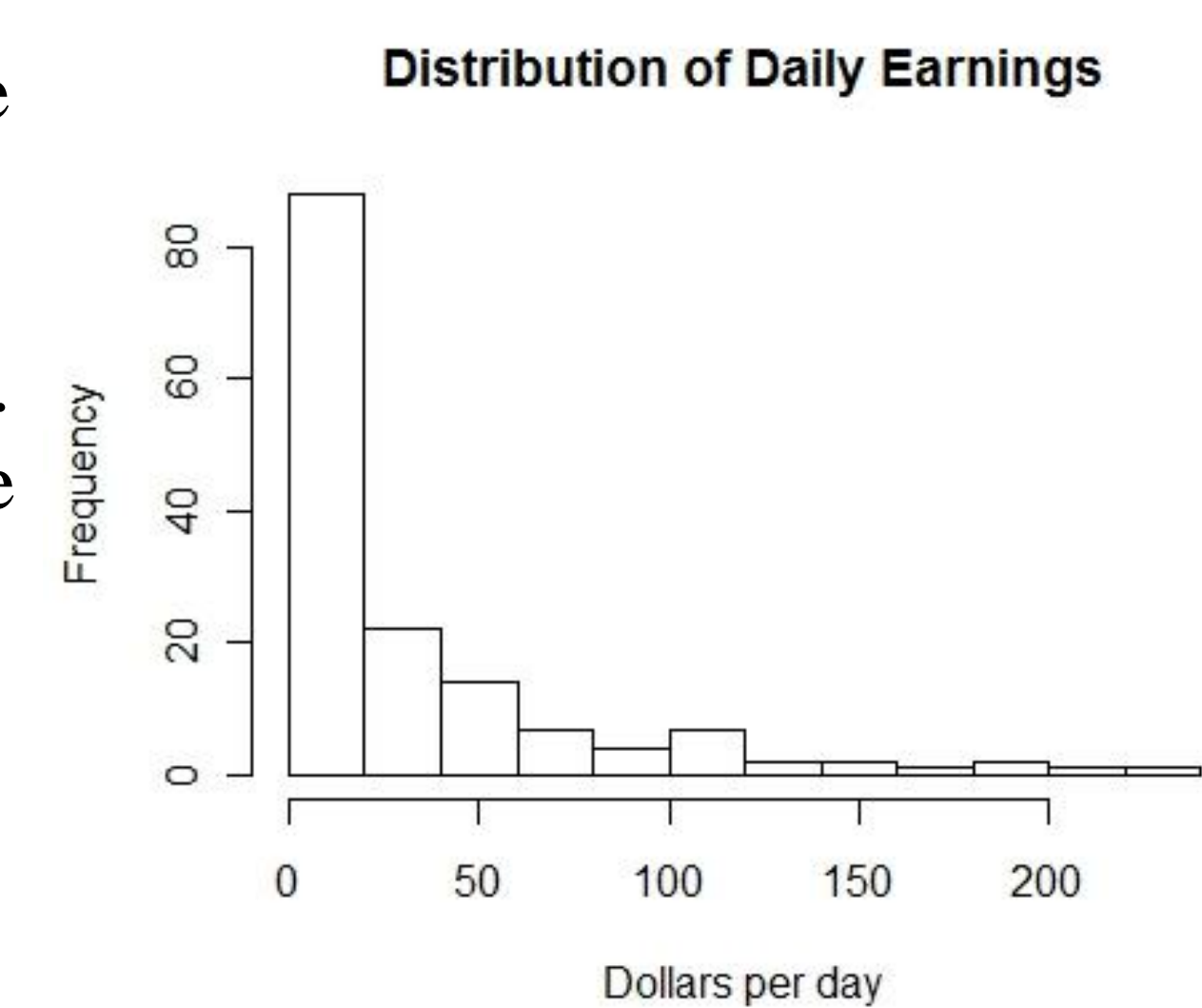D. All Others (Except Hong Kong)

Results

From the FilesTube crawl, we found that in 2009 three sites comprised the bulk (73%) of search results: Rapidshare, Megaupload, and Mediafire. This share fell in 2010 (15%) and 2011 (10%) as a number of other sites gained traction. Except for one site, all of the new entrants offered cash incentives to uploaders of popular content. The figure above shows the number of newly added links by the nine largest cyberlockers since January 2009. (The spikes in the chart are an unimportant artifact of how FilesTube adds cyberlockers. See paper for details.)

Listings per Month by Cyberlocker on FilesTube

Listings per Month for Rapidshare on Teh Paradox

From our Teh Paradox crawl, we can see the effect that the removal of Rapidshare's incentive system had on uploader activity. Rapidshare was one of the first cyberlockers to introduce incentive schemes, but removed them after pressure from the film industry. In February 2010, the cyberlocker ended its affiliate program which paid uploaders for posting popular content, and in June 2010 it ended an incentive program which offered gifts like free premium accounts. When the incentive programs ended, the number of posts that listed links to Rapidshare declined dramatically, by 98%, in the following months. Similar results can be seen from the FilesTube data which exhibited a 67% drop in Rapidshare links.

From our crawl of Wjunction we can get insight into the distribution of uploader earnings. Users of this forum posted screenshots of the amount they earned from various cyberlockers. From roughly 1,000 screenshots of FileSonic uploaders, we sub-sampled 151 and manually recorded the earnings (since these were screenshots our automated text-recognition methods gave unsatisfactory results.) There are obvious sample selection issues related to who decides to post their earnings, but these statistics give us a sense of the earnings potential of cyberlocker uploaders. The figure to the right shows the distribution of daily earnings. The average amount earned per day was $33.69 with a maximum of $226.27 and a minimum of $0.00. Assuming these amounts could be earned over an entire year, the average uploader in this sample would earn $12,298.45 over 365 days and the best uploader would earn $82,589.11.

Distribution of Daily Earnings

Methodology

We crawl three different sites associated with cyberlockers:

- FilesTube is a search engine that crawls forums and blogs to capture links posted to cyberlocker sites. We conducted a crawl between June and July 2011 and sent search queries for 3,356 movies released since 2006. This resulted in 6.8 million search results containing information on filenames, sizes, the hosting cyberlocker, the web address where FilesTube found the link, and the date the link was added to the index.

- Teh Paradox is is a discussion forum where links to files on cyberlockers are posted. In July 2011 we crawled this site and gathered the contents of 864,923 threads in the forum's movies and television sections.

- Wjunction is a forum where uploaders discuss the relative benefits of cyberlockers. With our third crawl, conducted in January 2012, we downloaded about 1,000 screenshots of earnings posted by uploaders to FileSonic, a popular cyberlocker site. An example of such a screenshot is shown above.

Conclusions

- The fastest growing cyberlockers, as measured by number of posted on FilesTube and Teh Paradox forum, are those which offer incentive plans.

- Cyberlockers compete for a relatively small number of uploaders. Our results suggest that for every one uploader there are over 11,000 downloaders.

- The end of incentive plans at Rapidshare was followed by a major drop-off in uploader activity.

- It is possible for uploaders to earn sizeable amounts from their activities. The average daily earnings for those who posted screenshots on a web forum was $33.69 with one uploader reporting earnings of $226.27 per day. These compare favorably with earnings reported for workers on Amazon's Mechanical Turk.

Our findings suggest that cyberlocker incentive plans have indeed fostered the current cyberlocker environment and have significantly influenced uploader behavior.

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