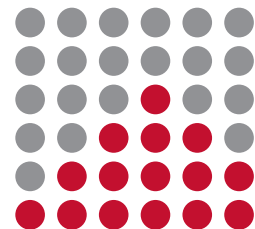


Anti-Piracy and Consumer Behavior: What We Know So Far

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Carnegie Mellon University



IDEA

**Initiative for Digital
Entertainment Analytics**

(Anti-)Piracy Questions

1. Does piracy harm producers?
2. Does piracy harm consumers?
3. Can anti-piracy initiatives help?

Question #1:
Does piracy harm
producers?

CULTURE

'FAST 8' KICK-STARTS SUMMER FOR HOLLYWOOD—AND MOVIE PIRATES

BY TUFAYEL AHMED ON 4/20/17 AT 7:27 AM

[P]irated copies of *Fast 8* still raced onto the internet Friday, the day of the movie's global release ...

Universal's box office haul hasn't been dampened by illegal downloads, however. *Fast 8* had the biggest global debut of any of the films in the action series

CULTURE

'FAST 8' KICK-STARTS SUMMER FOR HOLLYWOOD—AND MOVIE PIRATES

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An Empirical Analysis of the Impact of Pre-Release Movie Piracy on Box Office Revenue

Liye Ma

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We find that, on average, pre-release piracy causes a 19.1% decrease in revenue compared to piracy that occurs post-release.

Peer-Reviewed Literature

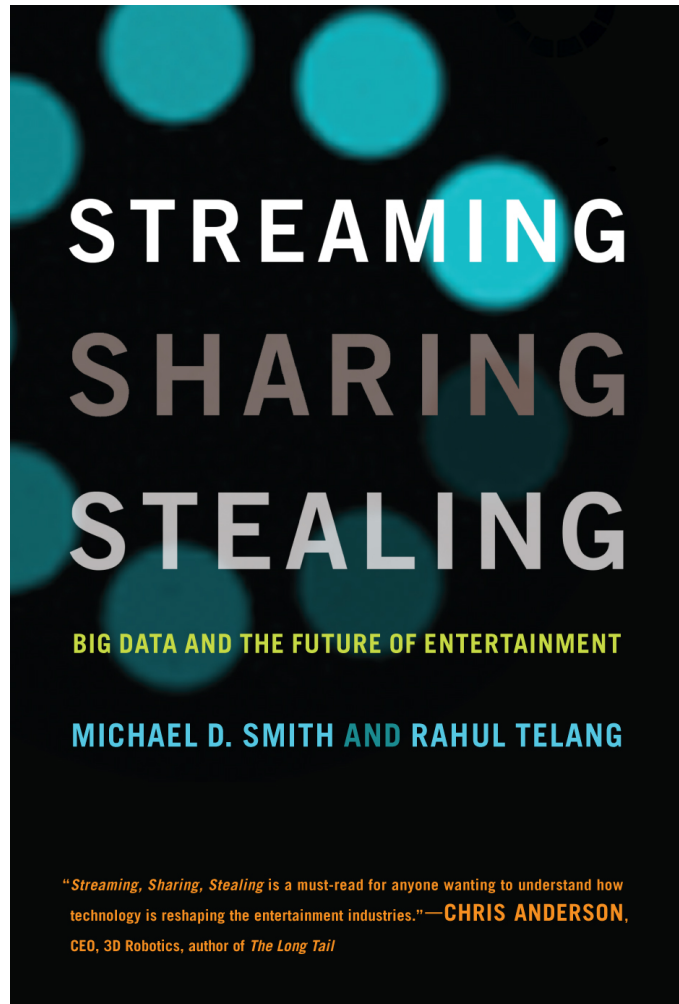


Table 6.1
Peer-reviewed journal articles finding no statistical impact of piracy.

	Primary data	Result
Oberholzer-Gee and Strumpf (2007, <i>J. of Political Economy</i>)	2002 OpenNap music downloads, 2002 US sales of popular albums	"[F]ile sharing has had no statistically significant effect on purchases of the average album in our sample."
Smith and Telang (2009, <i>MIS Quarterly</i>)	2005-06 Amazon DVD sales ranks and BitTorrent movie file downloads	"[T]he availability of pirated content at [television broadcast] has no effect on post-broadcast DVD sales gains."
Andersen and Frenz (2010, <i>J. of Evolutionary Economics</i>)	2006 survey of Canadian customers' file-sharing and CD purchasing behavior	There is "no (statistical) association between the number of P2P files downloaded and CD album sales."

Table 6.2
Peer-reviewed journal articles finding that piracy harms sales.

	Primary data	Result
Hui and Png (2003, <i>Contrib. to Economic Analysis & Policy</i>)	1994-1998 IFPI worldwide CD sales data and physical piracy rates	"[D]emand for music CDs decreased with piracy, suggesting that 'theft' outweighed the 'positive' effects of piracy."
Peitz and Waelbroeck (2004, <i>Rev. of Econ. Res. on Copyright</i>)	1998-2002 worldwide CD sales, IPSOS survey	"The implied loss of CD sales due to MP3
Table 6.2 (continued)		
Zentner (2007, <i>J. of Economic Policy</i>)	DeVany and Walls (2007, <i>Rev. of Industrial Organization</i>)	Box-office revenue and supply of pirated content for an unnamed movie
Stevens et al. (2005, <i>J. of Economic Policy</i>)	Hennig-Thurau, Henning, and Sattler (2006, <i>Marketing Science</i>)	2006 survey of German moviegoers
Bounie et al. (2007, <i>J. of Copyright</i>)	Table 6.2 (continued)	
	Primary data	Result
	Danaher et al. (2013, <i>J. of Industrial Economics</i>)	2008-2011 iTunes music sales in France and other European countries
Michel (2007, <i>J. of Economic Policy</i>)	Rob and Wal (2007, <i>J. of Economic Policy</i>)	Liebowitz (2007, <i>Management Science</i>)
Rob and Wal (2006, <i>J. of Economic Science Rev.</i>)	Bender and Wal (2006, <i>J. of Economic Science Rev.</i>)	Zentner (2007, <i>J. of Economic Science</i>)
Bhattacha (2007, <i>Ma Science</i>)	Waldfoegel (2007, <i>Information Systems and Policy</i>)	Ma et al. (2014, <i>Information Systems Research</i>)
Bai and Wal (2007, <i>Information Systems and Policy</i>)	Adermon and Liang (2014, <i>J. of Economic Behavior & Organization</i>)	2011-2013 sales and rental data for movies in 12 European countries from 3 major motion-picture studios
		Box office revenue for all movies whose wide release occurred between February 2006 and December 2008.
		Digital and physical music sales in Sweden, Norway, and Finland, 2004-2009.
		"The shutdown of Megaupload and its associated sites caused digital revenues for three major motion picture studios to increase by 6.5-8.5%."
		"Pre-release [movie] piracy causes a 19.1% decline in revenue compared to piracy that occurs post release."
		The IPRED copyright reform measure in Sweden "increased music sales by 36% in during the first six months [after it was implemented]. Pirated music therefore seems to be a strong substitute to legal music [purchases]."

Peer-Reviewed Literature

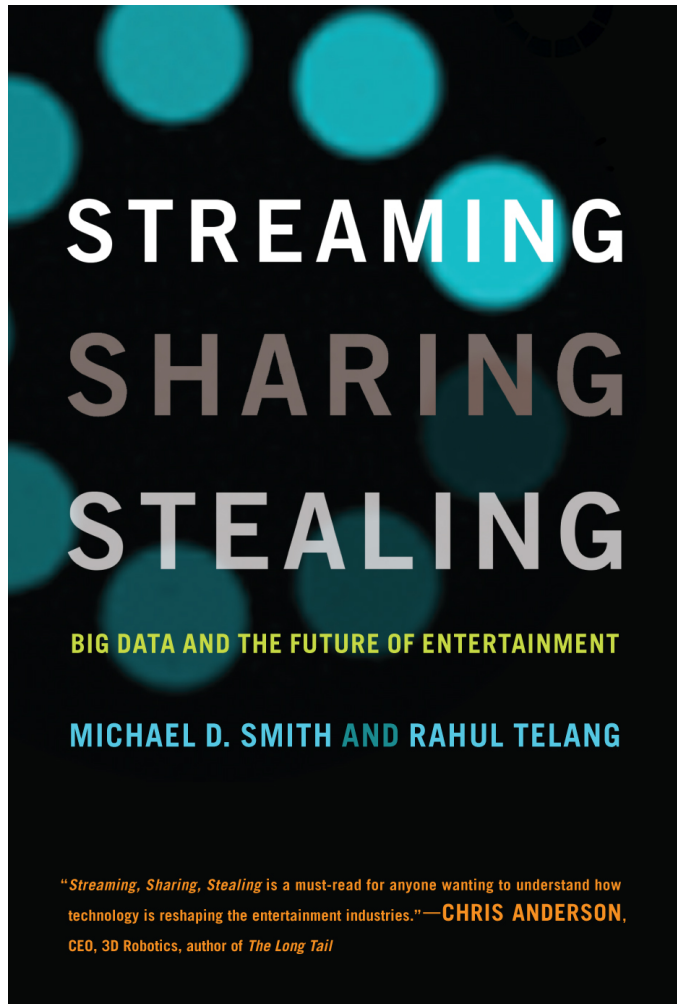


Table 6.1
Peer-reviewed journal articles finding no s

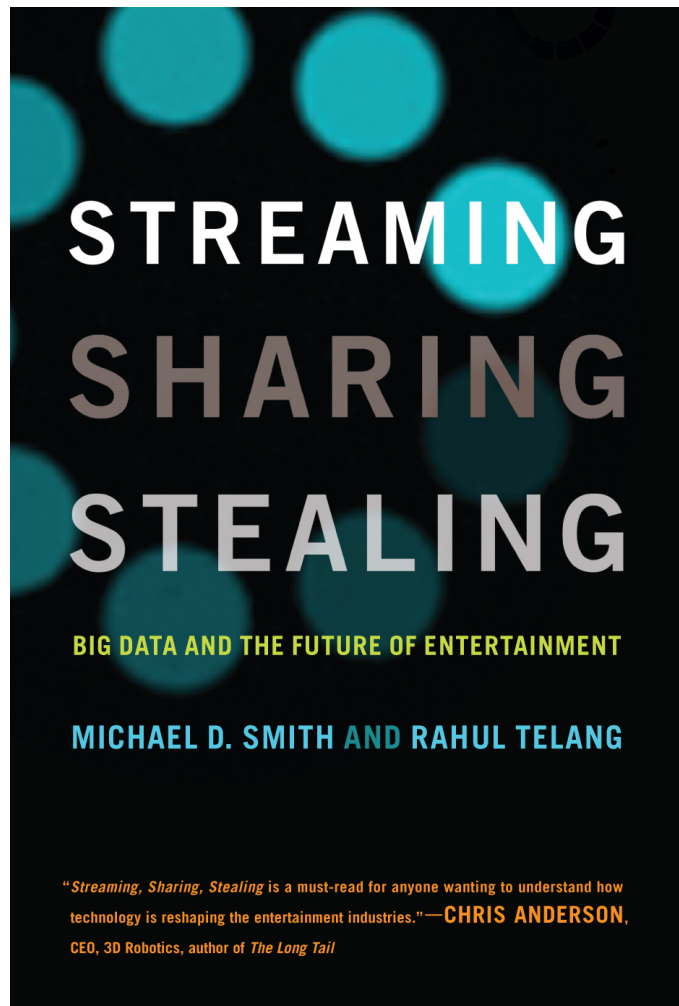
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Andersen and Frenz (2010, <i>J. of Evolutionary Economics</i>)	2006 survey of Canac customers' file-sharing CD purchasing behav

In these papers, we surveyed all the peer-reviewed journal articles we could find that had studied the effect of piracy on sales. We found 25 such articles. Three of them reported instances in which piracy hadn't affected sales; 22 reported instances in which piracy had harmed legal sales significantly.

For a complicated question such as the effect of piracy on sales, 22 out of 25 represents a remarkably powerful consensus in academia.

music CDs piracy, theft' positive' s of CD % for 2002." higher adband 98 of a major studio accelerated its face decline and (the picture to lose \$40 million in 195) has causes substantial salization of theater DVD rentals (and res responsible for revenue losses of music in The HADOPI anti-piracy law "caused iTunes music sales to increase by 100 million copies in France) which have led to changes in the group and control group sharing economies)." the music sharing is likely to explain about 20% of the total sales decline during the Napster period, which was mostly driven by downloading activities of households with children aged 6-17." general of the shutdown of file-sharing sites caused significant revenues for three major motion picture studios to increase by 18.5%." the release (movie) piracy and a significant 19.1% decline in revenue compared to the quarter that occurs post-release. The HADOPI copyright measure in France, which "increased music sales by 36% in during the first six months (after it was implemented). Pirated music therefore seems to be a strong substitute to legal music purchases."

Second-Order Effect

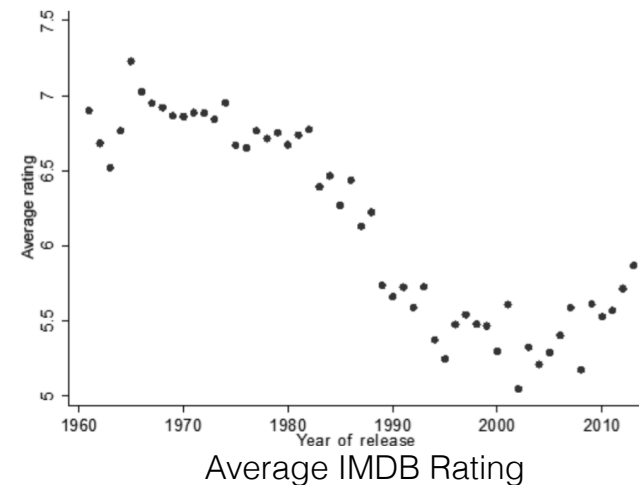
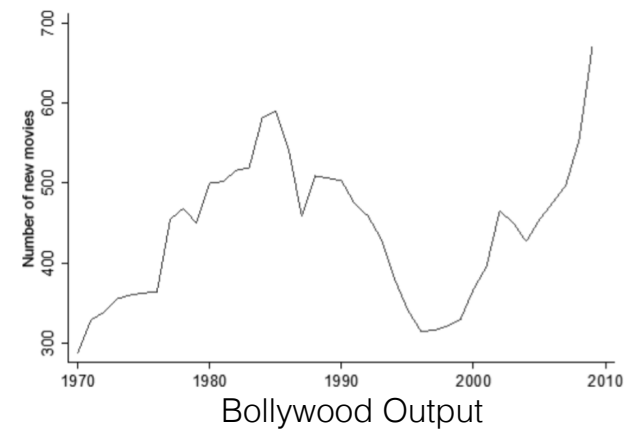


“And the effect of piracy on sales tells only part of the story. The problem, at least from the perspective of the entertainment industries, is that piracy not only reduces sales but also makes it harder for these industries to extract revenue from their remaining consumers. That’s because piracy creates a new alternative for consumers that competes on not just price but also on timeliness, quality, and usability—the same factors the entertainment industries have relied on to execute their business models.”

Question #2:
Does piracy harm
consumers?

Piracy and Bollywood

- Telang and Waldfogel (2016, Working Paper)
- Examine output in Bollywood after introduction of VCR in mid-1980s
- Significant drop in industry revenue, industry output, and average quality (IMDB ratings)



Question #3:
Can anti-piracy
initiatives help?

Can anti-piracy efforts help?

The New York Times

Sunday Review | The Opinion Pages

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE

NEWS ANALYSIS

Internet Pirates Will Always Win

By NICK BILTON

Published: August 4, 2012

STOPPING online piracy is like playing the world's largest game of Whac-A-Mole.

In the arcade version of Whac-A-Mole, the game eventually ends — often when the player loses. In the piracy arms-race version, there doesn't seem to be a conclusion. Sooner or later, the people who still believe they can hit the moles with their slow mallets might realize that their time would be better spent playing an entirely different game.

Anti-Piracy Categories

	Demand-Side	Supply-Side
Government/ Mandated		
Industry/ Voluntary		

Anti-Piracy Categories

Demand-Side

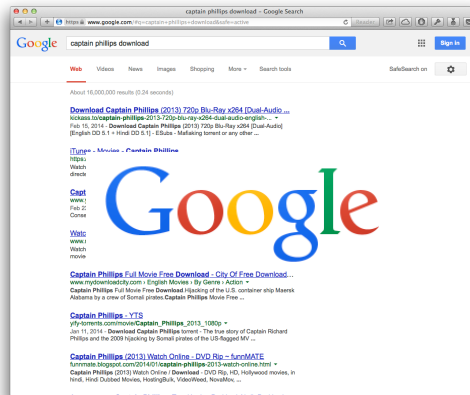
Supply-Side

Government/
Mandated



Digital Economy Act 2010




Industry/
Voluntary



Stay Tuned...

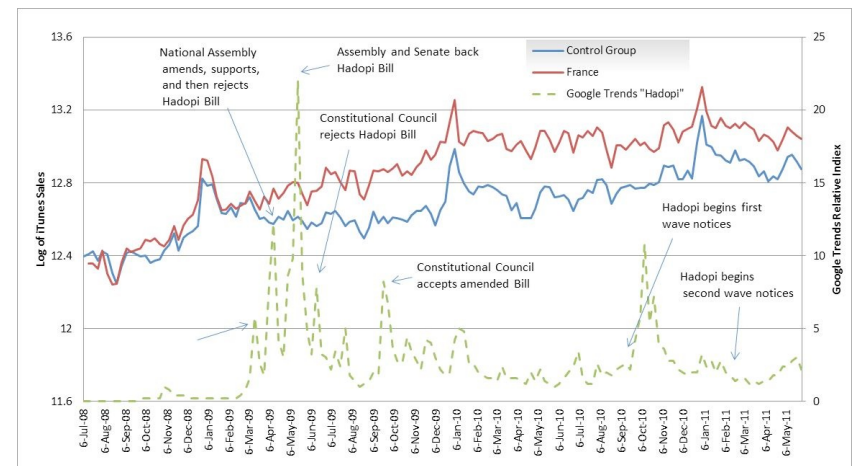
HADOPI

- Question: Did the French “HADOPI” graduated response law affect digital music sales?
- Data: iTunes music sales, July 2008 to May 2011 (EMI, Sony, Universal, Warner)
- France and Control Group (UK, Italy, Spain, Germany, Belgium)

	Demand-Side	Supply-Side
Government/ Mandated		
Industry/ Voluntary		<i>Stay Tuned...</i>




HADOPI Results

- *Danaher, Smith, Telang (2014, Journal of Industrial Economics)*
- 20-25% increase in iTunes sales in France (relative to control group countries)
- Increase larger for heavily pirated genres versus low piracy genres

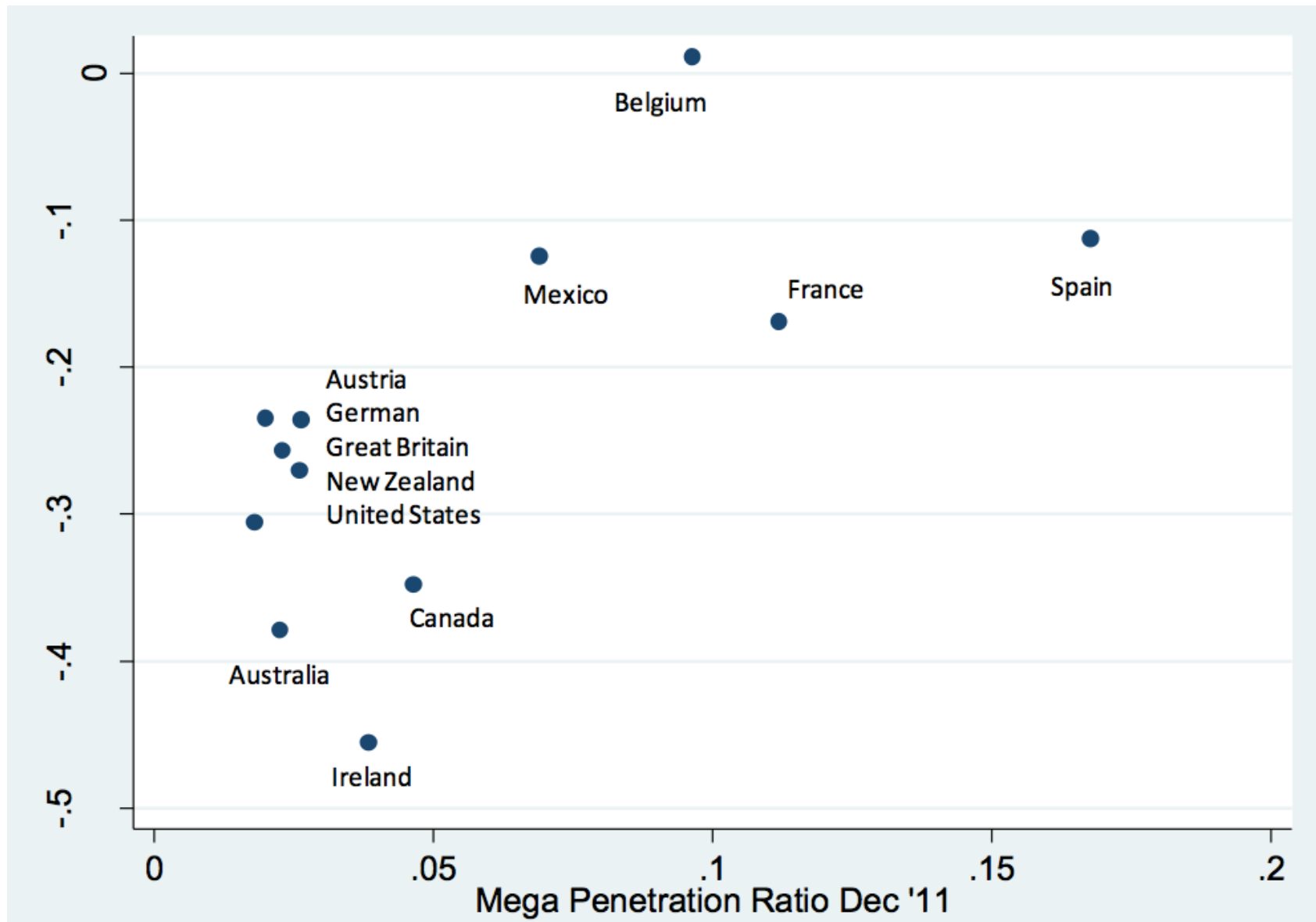


Megaupload

- Question: Did the shutdown of Megaupload change digital movie sales?
- Data:
 - Movie digital sales & rentals 9/11-5/12
 - Country-Level Megaupload Penetration Ratio (MPR)

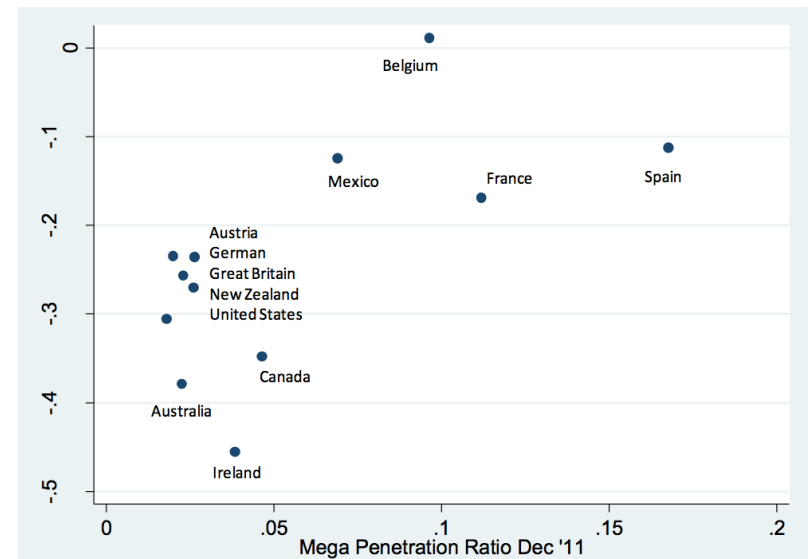
	Demand-Side	Supply-Side
Government/ Mandated		 <small>Digital Economy Act 2010</small>
Industry/ Voluntary		Stay Tuned...

Δ Sales v MPR



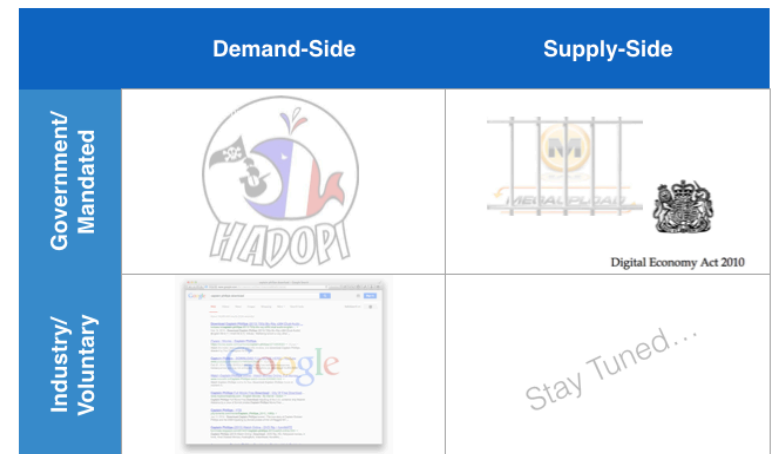
Megaupload Results

- Danaher and Smith (2014, *International Journal of Industrial Organization*)
- No correlation between MPR and sales changes before shutdown
- Aggregate 7-9% increase in revenue
 - Higher for sales than rentals



UK Site Blocking

- Question: Does blocking access to piracy enabling sites change user behavior?
- Setting: UK Digital Economy Act 2010
 - Piratebay blocked (May 2012)
 - 19 popular sites blocked (Oct-Nov 2013)
 - 53 popular sites blocked (November 2014)



Data

- Data obtained from company who tracks (with permission) site-level visits by a panel of users
 - Split customers into 10 groups based on usage of blocked sites in the month prior to the blocks
 - Observe before/after visits to
 - Blocked sites
 - Unblocked piracy sites
 - Legal sites
 - VPN sites

Results




- 5/12 Piratebay block: Very little change in visits to legal sites (significant increase in VPN usage and in visits to other pirate sites)

Results

- 5/12 Piratebay block: Very little change in visits to legal sites (significant increase in VPN usage and in visits to other pirate sites)
- 10/13 19-site block: 12% increase in visits to legal streaming sites.
- 11/14 53-site block: 6% increase in visits to paid legal sites, 10% increase in ad-supported sites
- *Current IDEA Projects: Analysis of similar blocking efforts in Brazil and Portugal*

Search and Piracy

- Question: Does search rank impact choice between pirated and legal content?
- Does this apply to users who state a preference for pirated or legal content in their search terms?

	Demand-Side	Supply-Side
Government/ Mandated		
Industry/ Voluntary		Stay Tuned...

Google Search

captain phillips download - Google Search

https://www.google.com/#q=captain+phillips+download&safe=active

Google captain phillips download Sign in

Web Videos News Images Shopping More Search tools SafeSearch on

About 16,000,000 results (0.24 seconds)

Download Captain Phillips (2013) 720p Blu-Ray x264 [Dual-Audio ...
kickass.to/captain-phillips-2013-720p-blu-ray-x264-dual-audio-english-...
Feb 15, 2014 - Download Captain Phillips (2013) 720p Blu-Ray x264 [Dual-Audio]
[English DD 5.1 + Hindi DD 5.1] - ESubs - Mafiaking torrent or any other ...

iTunes - Movies - Captain Phillips
https://itunes.apple.com/us/movie/captain-phillips/id714858093
Watch the trailer, read customer and critic reviews, and download Captain Phillips directed by Paul Greengrass for \$17.99.

Captain Phillips - DOWNLOAD FULL MOVIE HERE! - YouTube
www.youtube.com/watch?v=NN3kACflaK4
Feb 23, 2014 - YOU SHOULD KNOW... Piracy has serious consequences.
Consequences you may not anticipate. Think before you download! SUBSCRIBE: ...

Watch Captain Phillips online - Watch Movies Online, Full Movies ...
www.movie4k.to/Captain-Phillips-watch-movie-4240683.html
Watch Captain Phillips online for free. Download Captain Phillips movie at movie4k.to.

Captain Phillips Full Movie Free Download - City Of Free Download...
www.mydownloadcity.com > English Movies > By Genre > Action
Captain Phillips Full Movie Free Download. Hijacking of the U.S. container ship Maersk Alabama by a crew of Somali pirates. Captain Phillips Movie Free ...

Captain Phillips - YTS
yify-torrents.com/movie/Captain_Phillips_2013_1080p
Jan 11, 2014 - Download Captain Phillips torrent - The true story of Captain Richard Phillips and the 2009 hijacking by Somali pirates of the US-flagged MV ...

Captain Phillips (2013) Watch Online - DVD Rip ~ funnMATE
funnmate.blogspot.com/2014/01/captain-phillips-2013-watch-online.html
Captain Phillips (2013) Watch Online / Download - DVD Rip, HD, Hollywood movies, in hindi, Hindi Dubbed Movies, HostingBulk, VideoWeed, NovaMov, ...

Google Search

The screenshot shows a Google search interface with the query "captain phillips download". The search results are as follows:

- Captain Phillips - Movies & TV on Google Play**
https://play.google.com/store/movies/.../Captain_Phillips?id... Google Play
★★★★★ Rating: 4.4 - 854 votes
Captain Phillips is a multi-layered examination of the 2009 hijacking of the U.S. container ship Maersk Alabama by a crew of Somali pirates. It is — through ...
- iTunes - Movies - Captain Phillips**
https://itunes.apple.com/us/movie/captain-phillips/id714858093 iTunes
Watch the trailer, read customer and critic reviews, and download Captain Phillips directed by Paul Greengrass for \$17.99.
- VUDU - Captain Phillips**
www.vudu.com/movies/#overview/478735/Captain-Phillips Vudu
Watch Captain Phillips instantly on VUDU. Captain Phillips is a multi-layered examination of the 2009 hijacking of the U.S. container ship Maersk Alabama by a ...
- Watch Captain Phillips online - Watch Movies Online, Full Movies ...**
www.movie4k.to/Captain-Phillips-watch-movie-4240683.html
Watch Captain Phillips online for free. Download Captain Phillips movie at movie4k.to.
- Captain Phillips Full Movie Free Download - City Of Free Download...**
www.mydownloadcity.com English Movies By Genre Action
Captain Phillips Full Movie Free Download. Hijacking of the U.S. container ship Maersk Alabama by a crew of Somali pirates. Captain Phillips Movie Free ...
- Captain Phillips - YTS**
yify-torrents.com/movie/Captain_Phillips_2013_1080p
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funnmate.blogspot.com/2014/01/captain-phillips-2013-watch-online.html
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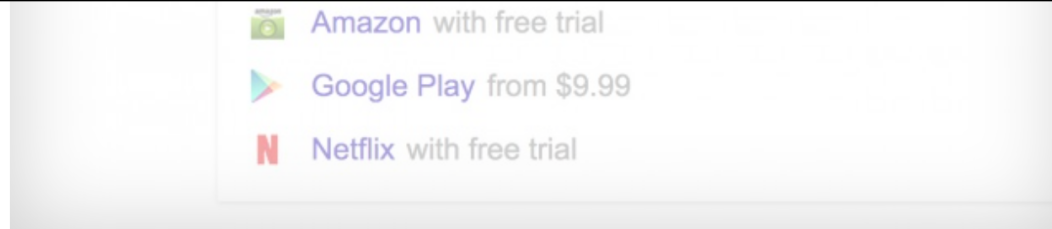
Different Goods?



HOME > EXTREME > GOOGLE FINALLY DECIDES TO DEMOTE 'NOTORIOUS' PIRACY SITES IN SEARCH RESULTS

Google finally decides to demote 'notorious' piracy sites in search results

“In general, if someone wants to pirate something, they’re going to pirate it, ***even if they have to click through a couple of pages of search results.***” (emphasis added)



Share This article

This week, Google is rolling out changes to its search engine that will “visibly affect” the rankings of “notorious” sites that enable the downloading or streaming of pirated music, movies, and TV shows. In the place of these unofficial or illegal links — which often rank above legal, commercial sites — Google will now show direct links to Amazon, Netflix, Spotify, and

Randomized Field
Experiment
(3 phases)




Screening Phase



In order to determine if you qualify to participate in this experiment, you are asked to answer the following screening question.

Out of the following list of movies, is there a movie you wish to watch and have not watched yet (and do not currently own, physically or digitally)? If your answer is 'Yes', choose the movie you wish to watch the most. If your answer is 'No' Choose the last option ('None of the above').

* The data in the following table are taken from IMDB.com

Movie	Genres	Storyline	Average Rating	Release Date
<input type="radio"/> 1. The heat 	Action Comedy Crime	Sarah Ashburn, an FBI agent, is extremely ambitious and has her eye on a promotion, but she doesn't get along with her co-workers. She is sent to Boston to uncover the identity of an elusive drug lord, Mr. Larkin, by tracking down his proxy, Rojas, and is told that she'll have a good shot at the promotion if she finds Larkin. When she arrives in Boston, she learns that Larkin has been eliminating his competition and taking over their operations. She learns that Rojas is in Boston PD custody and goes to see him to ask him what he knows about Larkin, but is warned that the cop who arrested Rojas, Shannon Mullins, is very territorial, and she is not exactly sociable. When the two meet they don't get along. When Mullins learns why Ashburn is in Boston, she decides to find Larkin herself. Ashburn is told by her boss to work with Mullins, but it won't be easy because Ashburn does things by the book while Mullins does things her way.	6.6/10	28 June 2013
<input type="radio"/> 2. The internship 	Comedy	Billy (Vince Vaughn) and Nick (Owen Wilson) are salesmen whose careers have been torpedoed by the digital world. Trying to prove they are not obsolete, they defy the odds by talking their way into a coveted internship at Google, along with a battalion of brilliant college students. But, gaining entrance to this utopia is only half the battle. Now they must compete with a group of the nation's most elite, tech-savvy geniuses to prove that necessity really is the mother of re-invention.	6.3/10	7 June 2013
<input type="radio"/> 3. Pacific rim 	Action Adventure Sci-Fi	When monstrous creatures, known as Kaiju, started rising from the sea, a war began that would take millions of lives and consume humanity's resources for years on end. To combat the giant Kaiju, a special type of weapon was devised: massive robots, called Jaegers, which are controlled simultaneously	7.2/10	12 July 2013

Search Engine

Re
Search

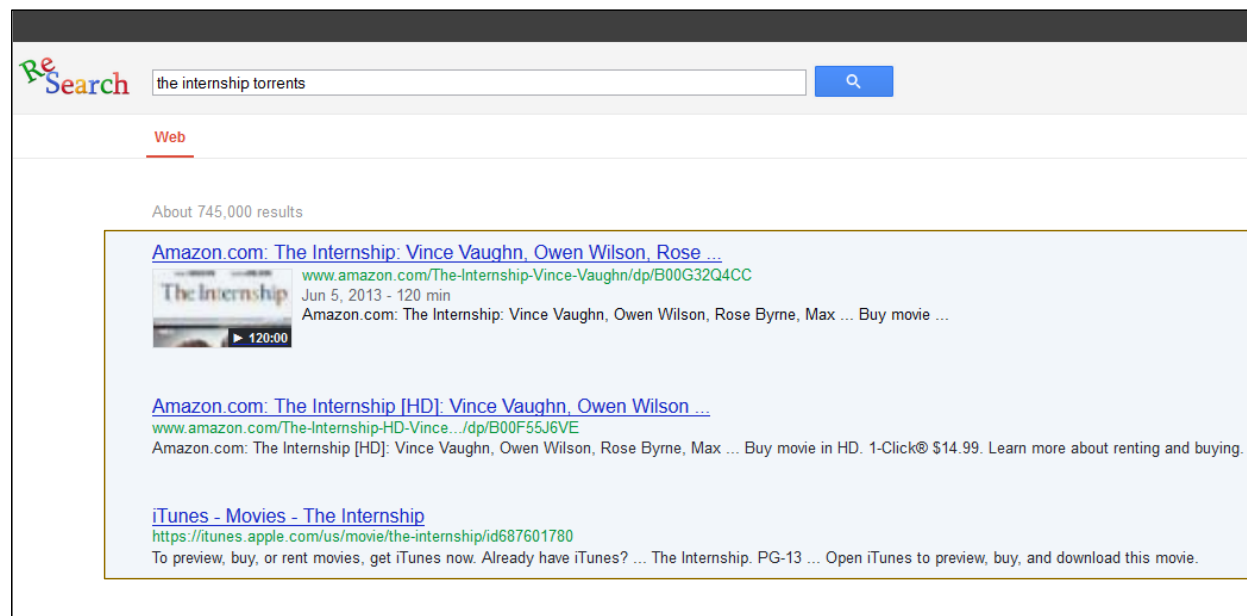
Search

Condition 1: Control

- No manipulation of results from original searches
- 10 pages, 10 results/page

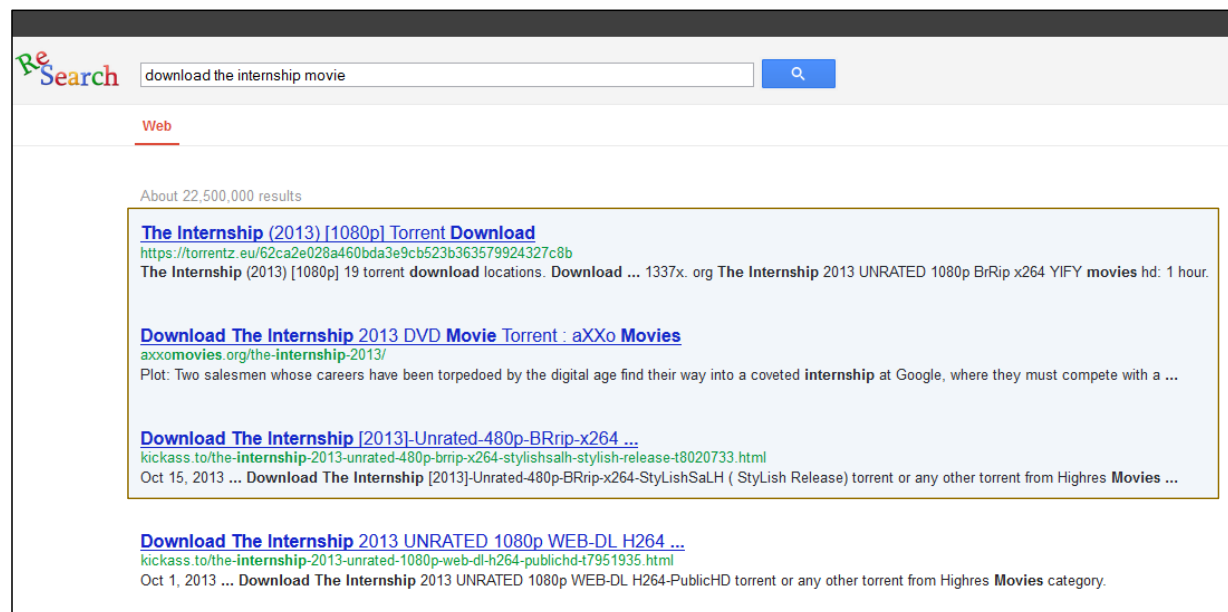
Condition 2: Legal Content Manipulation

- First 3 results on each of the 10 pages replaced (if necessary) with legal options.
- Infringing links in positions 4-10 on first page replaced with legal options (e.g., Amazon, iTunes).



Condition 3: Piracy Content Manipulation

- First 3 results on each of the 10 pages replaced (if necessary) with piracy options.
- Legal links in positions 4-10 on first page replaced with piracy options (e.g., piratebay, torrentz).



Results: Between Conditions

	n	# Legal option	% Legal option
Condition 1: No manipulation	60	48	80.0%
Condition 2: Legal content manipulation	71	67	94.4%
Condition 3: Infringing content manipulation	65	37	56.9%

Stated Preference?



“The RIAA might not like it, but the simple fact is that **when people are searching for [artist] [track] mp3 and [artist] [track] download, chances are they're not looking to buy**, but to download for free. ...

Even if Google magically did show them Apple, Amazon and Emusic as the top results ... the people doing those searches wouldn't go there.” (emphasis added)


Results:

Expressed Intent

First search term	Control group	Legal content manipulation	Infringing content manipulation
Legal intent	31/31 (100%)	22/23 (96%)	24/33 (73%)
Infringing intent	4/12 (33%)	15/17 (88%)	5/11 (45%)

Number (%) of users who purchased legally after using search terms expressing “legal intent” (legal domain, buy, rent) or “infringing intent” (pirate, torrent, free).

Anti-Piracy Impact

		Supply-Side	Demand-Side
Government/ Mandated		<p>20-25% increase in French digital music sales (Danaher et al, <i>Journal of Industrial Economics</i>, 2014)</p>	<p>7-9% increase in digital movie sales (Danaher and Smith, <i>IJIO</i>, 2014)</p> <p>Increase in legal consumption after large number of blocks (Danaher et al. 2017)</p>
Industry/ Voluntary		<p>Changes in search rank cause significant changes in consumption of piracy (Sivan et al. 2016)</p>	<p>Stay Tuned....</p>

Thank You

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