The Effect of Graduated Response Anti-Piracy Laws on Music Sales: Evidence from an Event Study in France

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Music Industry in Decline

- Global recorded music licensing plunged from $27B in 2000 to $15B in 2010
- U.S. revenues alone dropped 46%
- Some countries have witnessed a coinciding decline in investment in local repertoire
- Studies attribute 1/5 to all of this decline to online filesharing
- Other media industries show signs of trouble

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why is it
that people are willing to pay
£3.50 for a cup of coffee
• that cost pennies to make
• takes minutes to prepare
• and is gone forever after one use
but won't pay 99p for a song
• that cost thousands to record
• took years of practice to create
• and will last a lifetime?
RESPECT THE ARTIST
BUY THE MUSIC

Motivation

- How should we change copyright policy in the digital age?
- A lot of debate over which sorts of policies are too draconian and which aren't, but less conversation over what is actually effective
- Economics literature has spend 10 years quantifying losses to piracy but no literature examining the effectiveness of various anti-piracy policies / actions

Government Intervention

- What works and what doesn't? We don't know.
- Lack of clean experiments
- Difficult to simulate the counterfactual
- Few anti-piracy laws passed worth studying
  - Hard to pass these… example: SOPA

What is Hadopi?

- "Creation and Internet Law" in France
- Law empowers Hadopi government agency to send warnings to identified copyright infringers on the Internet
  - 1st "strike" – email warning to infringer
  - 2nd "strike" – registered mail warning to the infringer
  - 3rd "strike" – infringer subject to penalties such as a fine and **loss of Internet access for a month**
- "Graduated response"

Highly Controversial

- Cost of Hadopi thought to be high
- Hadopi may violate net neutrality principle and thus have intangible costs
- Hadopi may hold Internet users responsible for hijacked Internet connections (shifting burden of security)
- Some members of UN declared Internet access a "human right" and thus implicitly condemned Hadopi

Politically Charged

Hadopi's History

- **June-October 2008**: Bill presented to Senate, passed
- **March 2009**: Bill supported then rejected at National Assembly
- **May 2009**: Assembly and Senate back a revised Hadopi
- **June 2009**: Constitutional Council rejects main portion of Bill
- **October 2009**: Constitution Council backs amended Bill
- **September 2010**: Initial first wave notices begin to go out
- **Spring 2011**: Initial second wave notices go out

Previous Research – Piracy and Sales

- Liebowitz (2003): (2007)
- Hui and Png (2002)
- Peitz and Waelbroeck (2004)
- Zentner (2005)
- Oberholzer-Gee and Strumpf (2007)
- Rob and Waldfogel (2004); (2006)
- Waldfogel 2007
- Smith and Telang (2007)
- Danaher et al (2010)
- Danaher and Waldfogel (2011)
- Oh and Hann (2011)

Previous Research – Strategic Deterrance

Lawsuits:

- Blackburn (2004)
- Bhattacharjee et. Al. (2008)

DRM:

- Vernik (2009)
- Sinha et. al. (2010)
- Kemerer, Liu, and Smith (2011)

Poisoning:

- Christine et. al. (2005)

Pricing:

- Danaher (2011)

Digital Distribution:

- Danaher et. al. (2010)

Methodology

- Difference-in-difference model
- Use average trend of similar European countries to simulate France's sales in the absence of Hadopi
  - Italy, Spain, UK, Germany, Belgium
  - Provided the best control group based on pre-Hadopi matching
- Hadopi effect could begin with passage of law, with notices, or with salience of law in the media
  - We allow the data to inform this question
- Additional DDD evidence based on genre

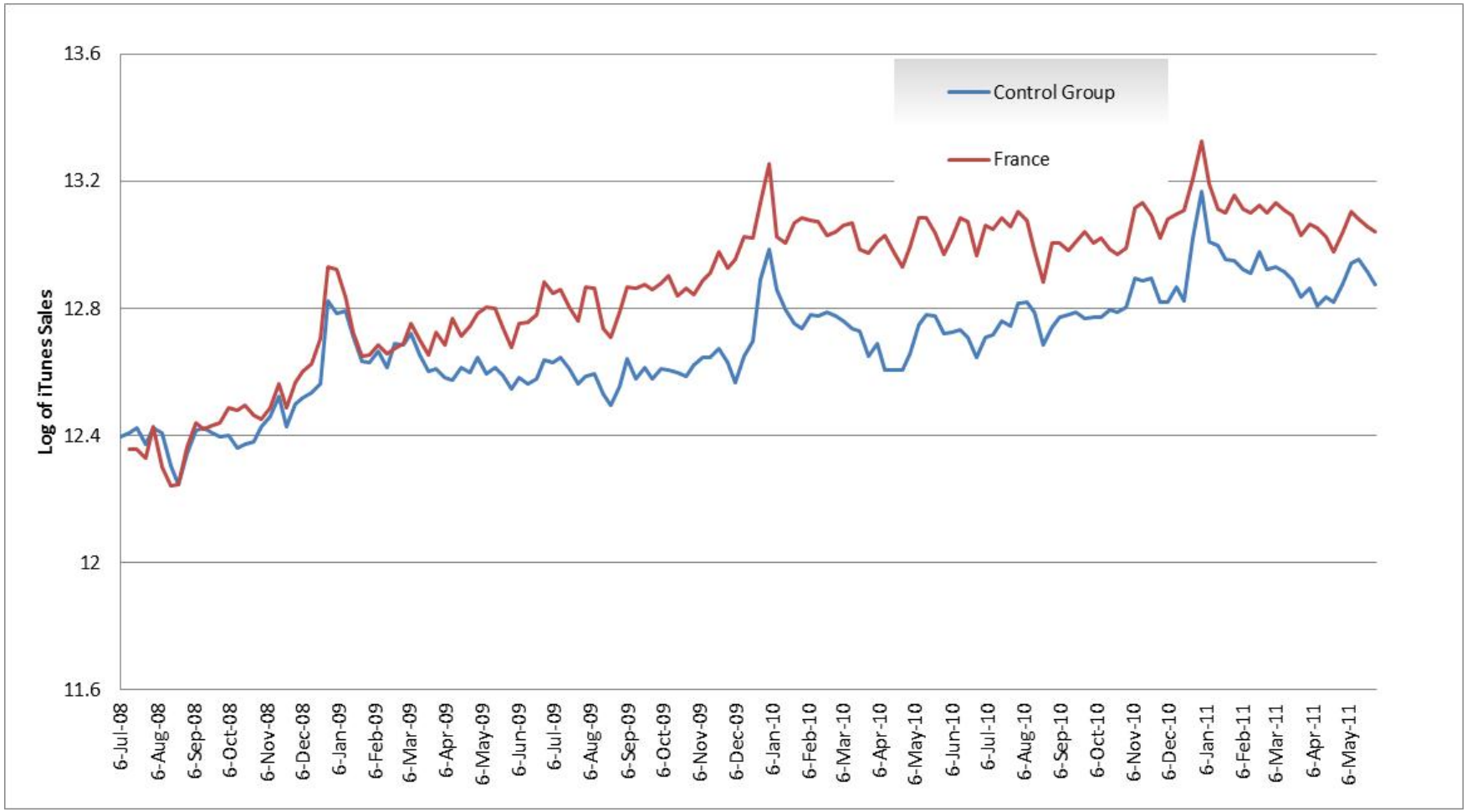
Data

- Panel data on weekly iTunes unit sales for the 4 major music labels in each country between July 2008 and May 2011
  - iTunes is an established digital platform
  - Reduced piracy would most likely affect digital sales before physical
  - Digital data are cleaner
  - But… this means we can't estimate the overall benefit of the law
- Data can be split by musical genre (2 labels only)
- Google Trends Relative Index on "Hadopi" in France

Descriptive Stats

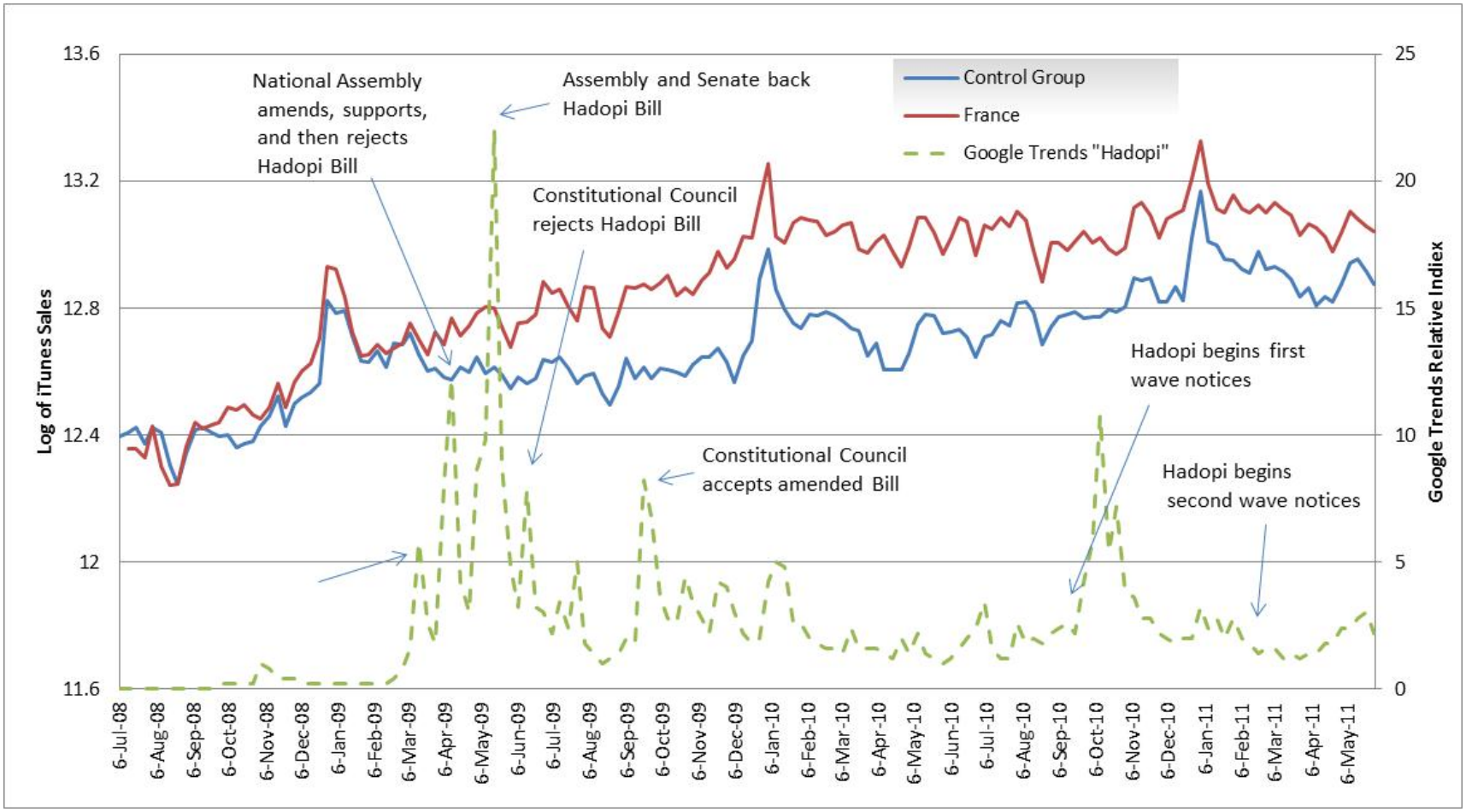
	iTunes track unit sales (thousands)			*iTunes album unit sales (thousands)*		
Country	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**
Belgium	133.4	130.1	21.3	9.8	9.7	2.2
Germany	728.1	691.6	148.9	87.4	85.0	22.9
Spain	65.7	64.1	11.6	10.1	9.8	2.3
France	447.7	473.9	96.6	49.7	53.4	14.7
Italy	183.9	187.7	37.1	18.7	18.6	4.6
UK	2899.3	2801.9	594.0	270.7	275.2	82.7
Total	743.0	252.6	1022.3	74.4	25.9	98.6

French iTunes Track Sales* vs. Non-Hadopi Control Group



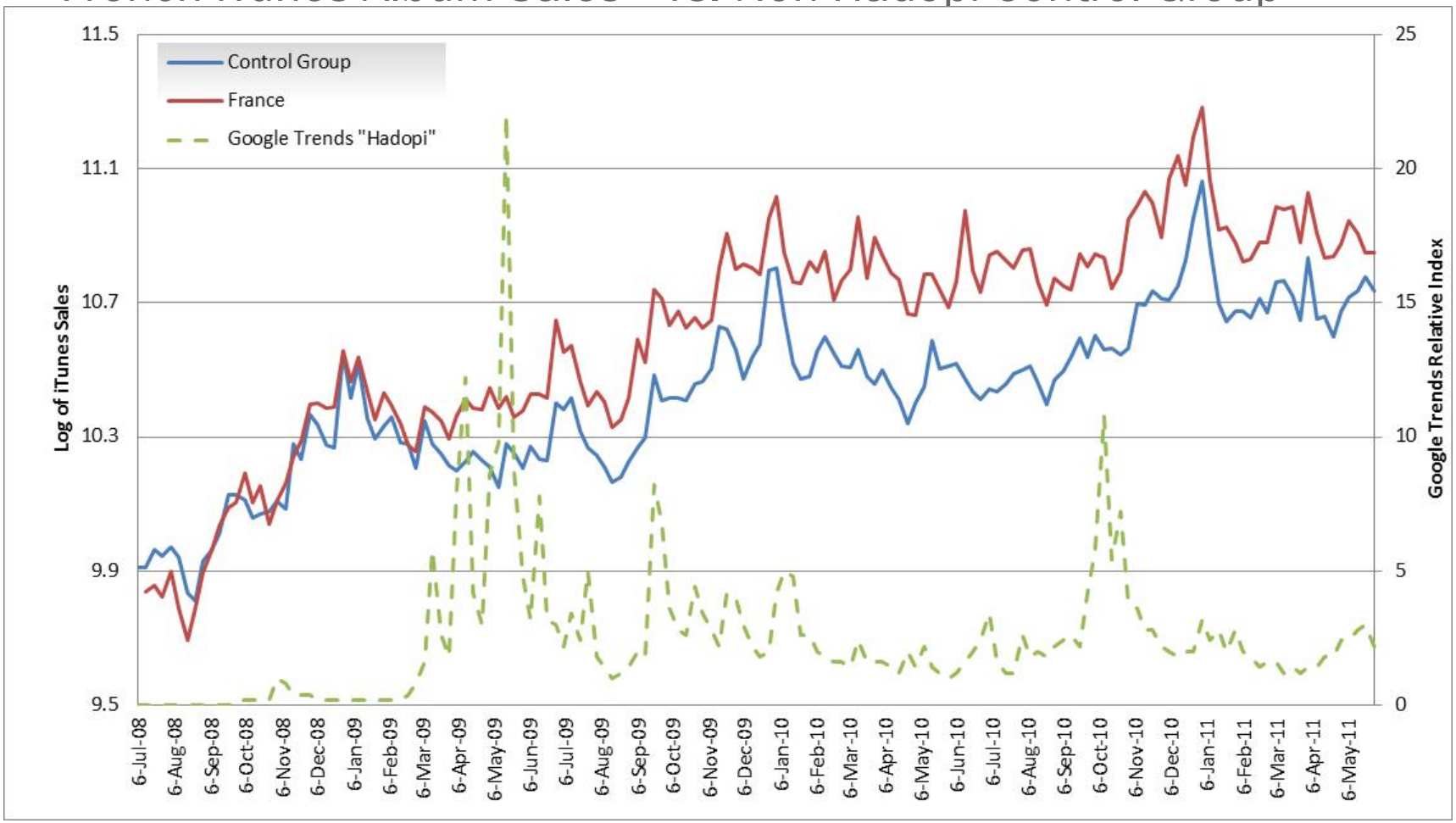
*Total iTunes track sales units for the four majors

French iTunes Track Sales* vs. Non-Hadopi Control Group



*Total iTunes track sales units for the four majors

French iTunes Album Sales* vs. Non-Hadopi Control Group



*Total iTunes album sales units for the four majors

Robustness Check: The Four Majors

- Cannot display data for each individual music label for competitive reasons
- However… each label's time graph looks quite similar to the aggregate one, so this is an industry-wide phenomonen
  - Not caused by one label's marketing or campaign efforts
  - Labels cannot legally collude, so each label might be looked at as partially independent from the others

Estimations

	(i)	(ii)
	All Tracks	**All Albums**
After Hadopi	0.228*	0.351*
	(0.037)	(0.033)
After Hadopi * France	0.203**	0.223**
	(0.037)	(0.033)
	[0.031]	[0.040]
Constant	12.520*	10.168*
	(0.023)	(0.020)
Observations	918	918
# of Countries	6	6
R-squared	0.361	0.417

Robust standard errors clustered at country level appear in parentheses
Two-tailed P-values derived from permutation test appear in square brackets
+ significant at 10%; ** significant at 5%; * significant at 1%
March 30, 2009 is counted as the beginning of Hadopi
Columns (i) and (ii) include data from all four majors, while columns (iii) through (v) reflect data from only two.

Estimations

	(i)	(ii)	(iii)
	All Tracks	**All Albums**	**Classical / Folk / Modern Christian / Jazz**
After Hadopi	0.228*	0.351*	-0.042
	(0.037)	(0.033)	(0.072)
After Hadopi * France	0.203**	0.223**	0.068
	(0.037)	(0.033)	(0.072)
	[0.031]	[0.040]	[0.628]
Constant	12.520*	10.168*	7.715*
	(0.023)	(0.020)	(0.044)
Observations	918	918	912
# of Countries	6	6	6
R-squared	0.361	0.417	0.082

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Estimations

	(i)	(ii)	(iii)	(iv)
	All Tracks	**All Albums**	**Classical / Folk / Modern Christian / Jazz**	**Rock / Pop**
After Hadopi	0.228*	0.351*	-0.042	0.142
	(0.037)	(0.033)	(0.072)	(0.068)
After Hadopi * France	0.203**	0.223**	0.068	0.158+
	(0.037)	(0.033)	(0.072)	(0.068)
	[0.031]	[0.040]	[0.628]	[0.092]
Constant	12.520*	10.168*	7.715*	11.411*
	(0.023)	(0.020)	(0.044)	(0.042)
Observations	918	918	912	912
# of Countries	6	6	6	6
R-squared	0.361	0.417	0.082	0.103

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Estimations

	(i)	(ii)	(iii)	(iv)	(v)
	All Tracks	**All Albums**	**Classical / Folk / Modern Christian / Jazz**	**Rock / Pop**	**Rap / Hip Hop**
After Hadopi	0.228*	0.351*	-0.042	0.142	0.846*
	(0.037)	(0.033)	(0.072)	(0.068)	(0.205)
After Hadopi * France	0.203**	0.223**	0.068	0.158+	0.260
	(0.037)	(0.033)	(0.072)	(0.068)	(0.205)
	[0.031]	[0.040]	[0.628]	[0.092]	[0.531]
Constant	12.520*	10.168*	7.715*	11.411*	8.731*
	(0.023)	(0.020)	(0.044)	(0.042)	(0.127)
Observations	918	918	912	912	912
# of Countries	6	6	6	6	6
R-squared	0.361	0.417	0.082	0.103	0.42

Robust standard errors clustered at country level appear in parentheses

Two-tailed P-values derived from permutation test appear in square brackets

+ significant at 10%; ** significant at 5%; * significant at 1%

March 30, 2009 is counted as the beginning of Hadopi

Columns (i) and (ii) include data from all four majors, while columns (iii) through (v) reflect data from only two.

Discussion

- Effect of Hadopi was to increase French iTunes song sales units by 22.5% on average after Hadopi
  - Album sales units increased by 25%
- Effect of Hadopi begins upon national awareness of law and not simply passing or enforcement
- Effect is larger for highly pirated genres and smaller for less pirated genres
- Effect is not label-specific

Discussion

- This study suggests that Hadopi increased iTunes revenues to the four majors by €9.63 million per year on average for the two years following its passing (13.75 million if we include iTunes' cut)

- Implication is that policies less Draconian than SOPA/PIPA can be effective (didn't even need to enforce the penalty to see an effect)

- Implications for other countries considering similar or even stricter measures
  - U.S. voluntary graduated response, Germany

Challenges

- Hadopi Bill actually involves a "carrot" and a "stick"
  - The warnings + sanctions are the stick and receive the most attention
  - However, there is also a "carrot"
    - Education campaign about piracy and legal alternatives
    - Billboards and ad campaign to build awareness
    - Price discount to youths under 18 (but this only started in 2011)
- Can't disentangle these effects
- We measure the benefits, but can't measure the costs or perform a social welfare analysis

Next – Supply Side Intervention

- Government shutdown of Megaupload
- Largest piracy cyberlocker
- Did pirates switch to legal consumption channels or simply migrate to other filesharing services?
- Use cross-country variation in pre-shutdown Megaupload adoption to measure "intensity of treatment" of shutdown

Post Shut-down Change in Digital Movie Sales vs. Pre-Shutdown Megaupload Penetration