



YouTube and Recorded Music: Short Run and Long Run Perspectives

(Video Killed the Radio Star: Online Music Videos and Digital Music Sales, with Tobias Kretschmer, LMU Munich)

(YouTube Decade: Cultural Convergence in Recorded Music, with Lisa M. George, Hunter College)

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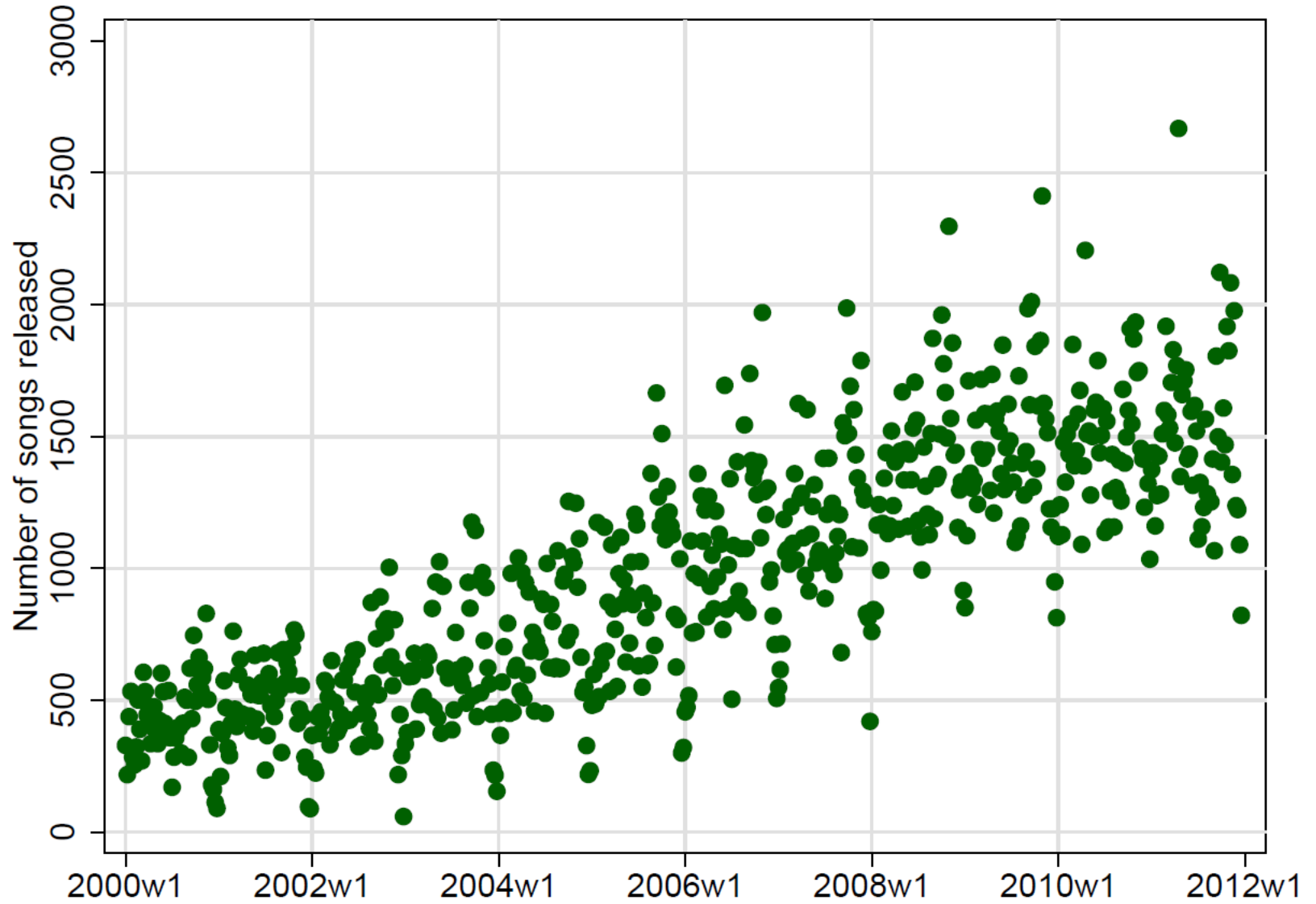
Media Economics Workshop, October 11, 2014

YouTube in the short run

**Videos and digital record
sales: substitutes or
complements?**

(with Tobias Kretschmer)

Every week 1500 new songs come to the market



Source: Discogs.com. US releases on the song-level (contains singles and albums, all formats)

Experience goods and consumer search

- Music is an **experience good**, consumers cannot evaluate quality before consumption (Nelson, 1970)
 - Search for goods that map individual consumer preferences is costly; market outcome is inefficient
- **Prices** are almost uniform, therefore **provide little information about quality**
- Consumers may **reduce search costs** by relying on
 - ...popularity information (sales rankings) and (automated) recommendations
(Tucker and Zhang, 2012; Hendricks et al. 2012; Dewan and Ramaprasad, 2012; Oestreicher-Singer and Sundararajan, 2012)
 - ...observed quality of related products
(Hendricks and Sorensen, 2009)
 - **...free samples**



What we know from the piracy literature

Displacement effect

- Sales displacement: Illegal downloads harm sales (Smith and Telang, 2012)
- Long run effect: decreased incentives for innovation (Bae and Choi, 2006)
 - Not much empirical support (Waldfoegel, 2012, 2013)

Promotional effect

- Sampling effect may overcompensate displacement
 - Reduced consumer search costs, improved match (Peitz and Waelbroeck, 2006)
 - Additional demand due to network effects (Takeyama, 1994)
 - Complementarities between free and paid consumption (Aguilar and Martens, 2013; Bourreau et al. 2013)



Unfortunately, this video is not available in Germany because it may contain music for which GEMA has not granted the respective music rights.

Sorry about that.

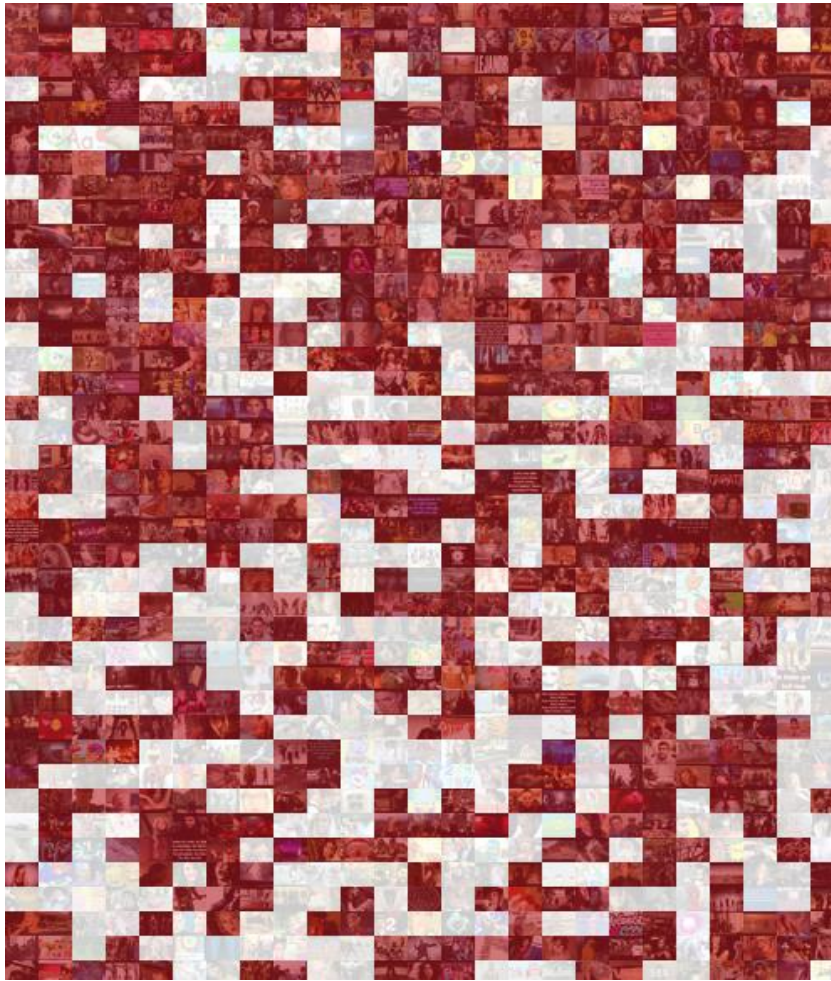


PSY - GANGNAM STYLE (강남스타일) M/V



officialpsy · 54 videos

61.5% of the worldwide top 1000 Youtube videos are blocked in Germany



Including “*PSY – Gangnam Style*”
(2,103,071,448 Views)
“*Justin Bieber – Baby*”
(1,094,482,592 Views)

Nearly all of the blocked clips are music videos.

Germany is very different:
South Sudan: 15.3%,
Vatican: 5.1%, Afghanistan:
4.4%, France: 1.0%, Spain:
0.6%, UK: 0.8%, US: 0.9%

<http://apps.opendatacity.de/gema-vs-youtube/en/>

The shock is exogenous to the record industry



Since 2009: Ongoing royalties dispute between representatives of the rightholders (not the rightholders themselves!) and YouTube

GEMA is the de-facto monopolist collective society for musical works in Germany

YouTube automatically blocks videos with copyrighted content

„The biggest problem to solve the Youtube issue is: they want a non-disclosure deal and we are not allowed by German law to do a non-disclosure with anybody. We have to do it open. We have to tell our members, and everybody, what’s the deal.“
(Rolf Budde, GEMA supervisory board)

http://www.youtube.com/watch?feature=player_detailpage&v=Hh3Ks4Kxvtk#t=570s



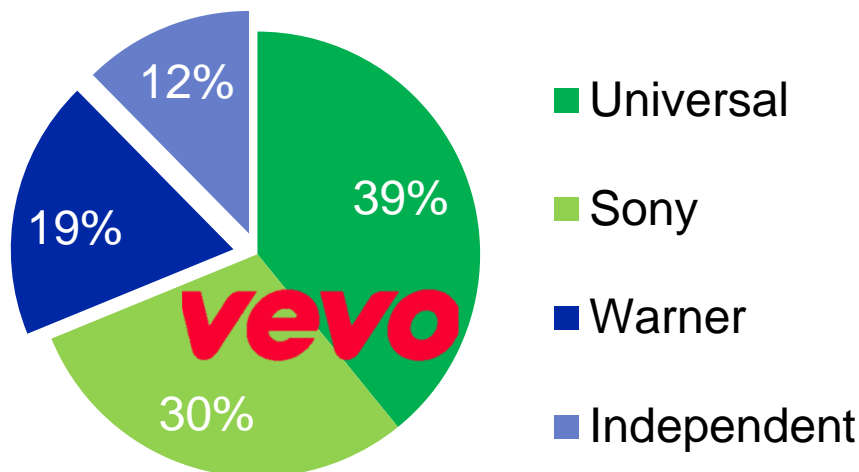
How the record industry thinks about this



"Germany is a developing country in the digital music market. GEMA apparently has not yet understood the new developments in the international music market"

(Frank Briegmann, President of Universal Music Germany, thecmuwebsite.com)

"I suspect that some members of GEMA's supervisory board have not yet arrived in the digital era" (Edgar Berger, CEO of Sony Music Germany, billboard.com)



VEVO is the most viewed channel on YouTube, accounting for 40% of total views across all categories

The role of Youtube in music discovery

Nielsen online survey (3,000 US consumers, 2012)

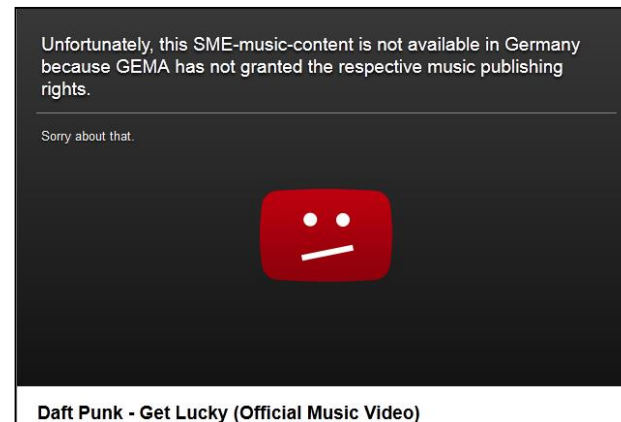
- Top 3 channels for music discovery
 - Radio (48%),
 - Friends/Relatives (10%)
 - Youtube (7%)
- Young consumer music listening behavior
 - Youtube (64%),
 - Radio (56%),
 - iTunes (53%),
 - CDs (50%)



YouTube is part of the Billboard
Top 100 charts since February 2013

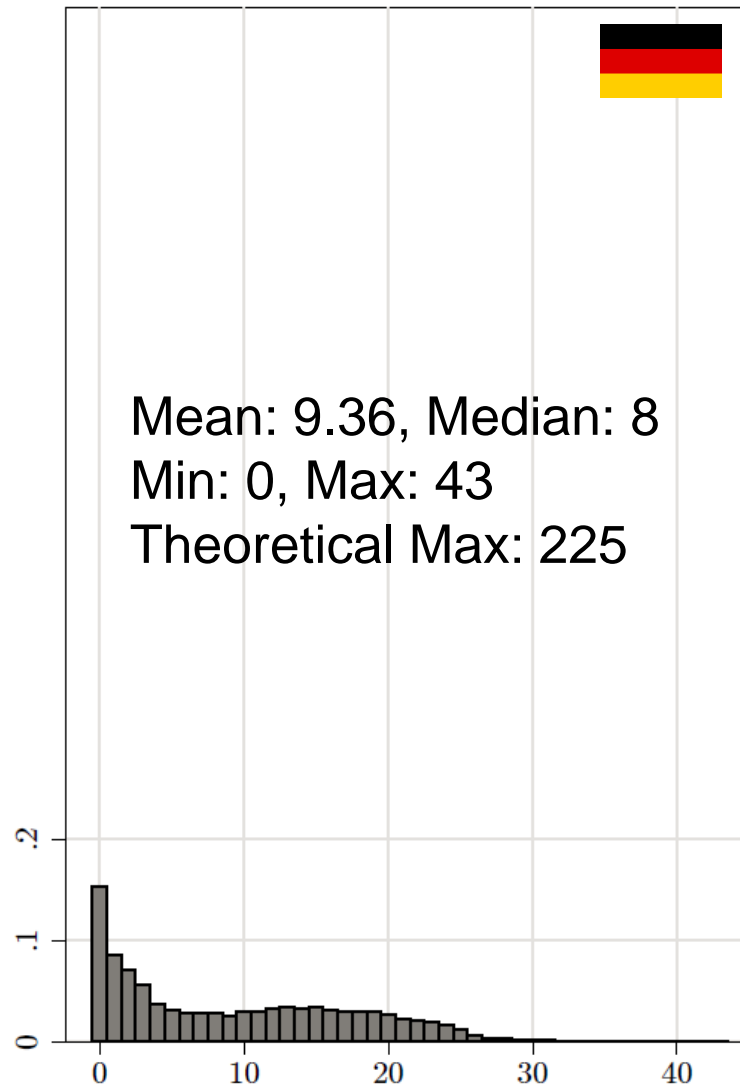
iTunes Charts and corresponding YouTube videos

- Daily observations from Feb 15th until Aug 26th 2013 (185 days)
- Top 300 daily songs and albums from iTunes
- Australia, Austria, Canada, France, Germany, Italy, Spain, Switzerland, United Kingdom, United States
- Search query “Artist - Song”, top 25 search results in every country
- For each video: list of countries in which it is not available



Same Youtube-ID in the US and Germany

Number of blocked videos per song



Estimation strategy

- We compare the sales of the same song, on the same day, sold in the same store, in different countries with different availability on Youtube

$$\begin{aligned}\text{Log}(\text{Rank}_{ijt}) = & \beta_1 \text{Log}(\text{No. Restricted}_{it}) + \beta_2 \text{Germany}_{ijt} \\ & + \beta_3 \text{Log}(\text{No. Restricted}_{it}) * \text{Germany}_{ijt} + \delta' C_{ijt} + u_{ijt}\end{aligned}$$

- Dealing with ranks versus sales (Chevalier and Goolsbee, 2003)

$$\text{Sales} = a \text{Rank}^b, b < 0$$

$$\log(\text{Rank}) = \tilde{a} + \frac{1}{b} \log(\text{Sales})$$

- We estimate \hat{b} using external data (digitalsalesdata.com, last.fm)
- *Work in progress: Weekly data on physical and digital unit sales, number of plays on free and premium streaming services.*

Identification

- We do not observe “before” and “after” period, but variation within treatment
- Identification comes from temporal variation in the number of blocked videos per song (from new videos being uploaded)
- The timing of blocking is assumed to be random
 - Youtube may leave videos with more clicks longer online to leverage advertising revenues
 - This is risky without an agreement with the collection society
 - Very low correlation between clicks and time until the video is removed (doubling the views increases likelihood of non-immediate blocking by only 1.5%)
- *Work in progress: Entry of competitive music video platform in the German market (VEVO.com; Universal and Sony). Similar preliminary results.*

Song ranks: No significant effect

	Log(Restricted)		Share Restricted	
Germany	0.260***	(0.098)	0.274***	(0.092)
Log(Restricted)	-0.029	(0.022)		
Germany * Log(Restricted)	0.042	(0.028)		
Share Restricted			-0.291	(0.248)
Germany * Share Restricted			0.349	(0.269)
Log(Age)	0.178***	(0.019)	0.178***	(0.019)
Price Category	0.373***	(0.022)	0.373***	(0.022)
Australia	0.186***	(0.072)	0.184**	(0.072)
Austria	0.264***	(0.081)	0.264***	(0.081)
Canada	-0.005	(0.029)	-0.006	(0.029)
France	0.147*	(0.079)	0.146*	(0.079)
Italy	0.320***	(0.080)	0.320***	(0.080)
Spain	0.187**	(0.084)	0.186**	(0.084)
Switzerland	0.353***	(0.079)	0.352***	(0.079)
United Kingdom	0.112	(0.077)	0.110	(0.077)
Constant	2.803***	(0.246)	2.803***	(0.246)
Observations	503,028		503,028	
$\overline{R^2}$	0.616		0.616	

Song, genre, month, calendar week and weekday fixed effects, United States is the omitted category. Standard errors clustered on the song-level in parentheses.

Promotional vs. displacement effect

Promotional effect depends on how well the sample informs about the quality of the product, displacement effect depends on relative prices (free vs. store price)

Song Preorders

- Radio airplay and music videos before the actual release
- Payment in advance, shipping on the day of release (relative higher price)
- *Displacement effect should prevail*

Albums

- Bundles of n songs (with a price discount)
- One individual song informs about $1/n$ (or more) parts of the total album
- ... but does not fully replace album sales
- *Net effect is ambiguous*

Song preorders and album sales ranks

	Song Sales Rank		Album Sales Rank	
Log(Restricted)	-0.029	(0.022)	0.004	(0.026)
Germany * Log(Restricted)	0.042	(0.028)	0.100**	(0.040)
Preorder	0.159	(0.103)	One more restricted video leads to 8-20 percent increase in preorder song sales, 1-3 percent decrease in album sales	
Preorder * Log(Restricted)	0.975***	(0.250)		
Germany * Preorder	-0.264	(0.230)		
Germany * Preorder * Log(Restricted)	-0.713***	(0.277)		
Log(Age)	0.180***	(0.020)		
Price Category / Log(Price)	0.373***	(0.022)		
Constant	2.787***	(0.248)	-2.005***	(0.338)
Observations	503,028		222,400	
$\overline{R^2}$	0.617		0.749	

Song/album, genre, month, calendar week and weekday fixed effects, United States is the omitted category. Standard errors clustered on the song/album-level in parentheses.

YouTube in the long run

**Cultural convergence in
recorded music?**

(with Lisa George)

YouTube is both a local and a global platform

- Reduces fixed entry costs for local artists but also lowers the cost of access to international superstars



- **Net effect is an empirical question. Has YouTube lead to more or less convergence in international music markets?**
- Policy interest in Europe to promote domestic culture (airplay quota implemented in France and Ireland, under discussion in Germany)
- Ferreira and Waldfogel (2013) show a persistent taste for domestic music and stable export shares relative to GDP. The paper ends in 2007 where YouTube starts to become important.

Data and identification strategy

- **Identification strategy:** We compare the German music market to Austria (control group; shared cultural background and language) and the US (most imports), before and after the ban of (official) videos on YouTube in 2009
- **Data:** Weekly top 75 single charts from Austria, Germany and the US, 2001-2013
 - (Top 100 account for 50% of Top 1000 listening)
- **Dependent variables**
 - **Variety:** # unique titles per year
 - **Local music:** # titles that do not appear on the US charts
 - **Imported music:** # titles that appear on German/Austrian and US charts
 - **Turnover:** # weeks a title stays on the charts
 - **Convergence Speed:** # weeks until a title is on the charts

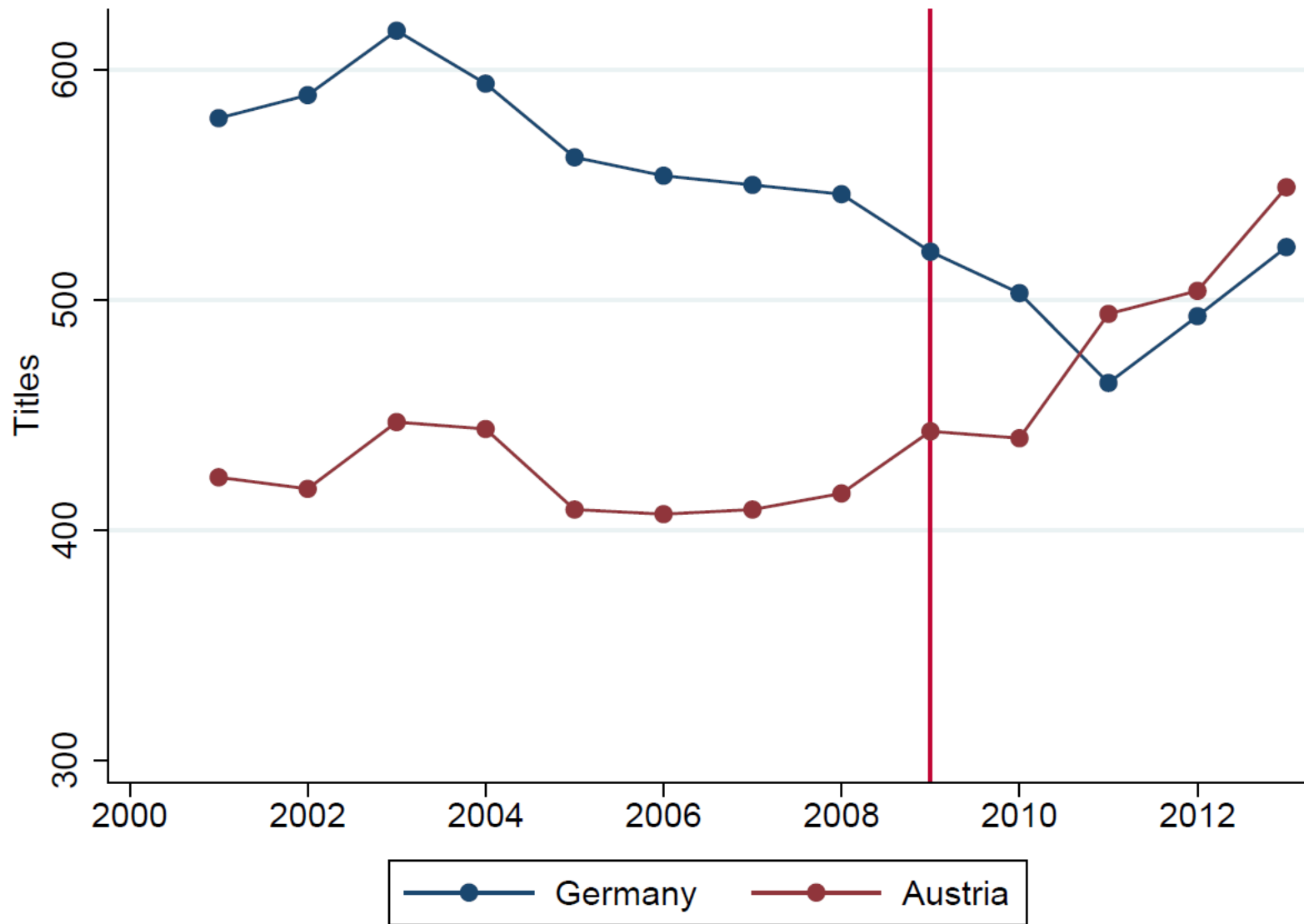
German YouTube is different

Table 2: Supply and Demand for Music on YouTube

	US	Austria	Germany
<i>Relevance Share</i>			
Page 1	0.78	0.77	0.75
Page 2-4	0.75	0.74	0.74
Page 5-25	0.71	0.71	0.72
<i>Official Video Share</i>			
Page 1	0.09	0.09	0.05
Page 2-4	0.02	0.02	0.02
Page 5-25	0.02	0.02	0.02
<i>Viewing Share</i>			
Page 1	0.83	0.82	0.75
Page 2-4	0.04	0.05	0.07
Page 5-25	0.01	0.01	0.01

Note: Individual searches for songs on US, Austrian and German YouTube, based on a list of songs compiled from Musicbrainz.

More unique titles on the top charts?

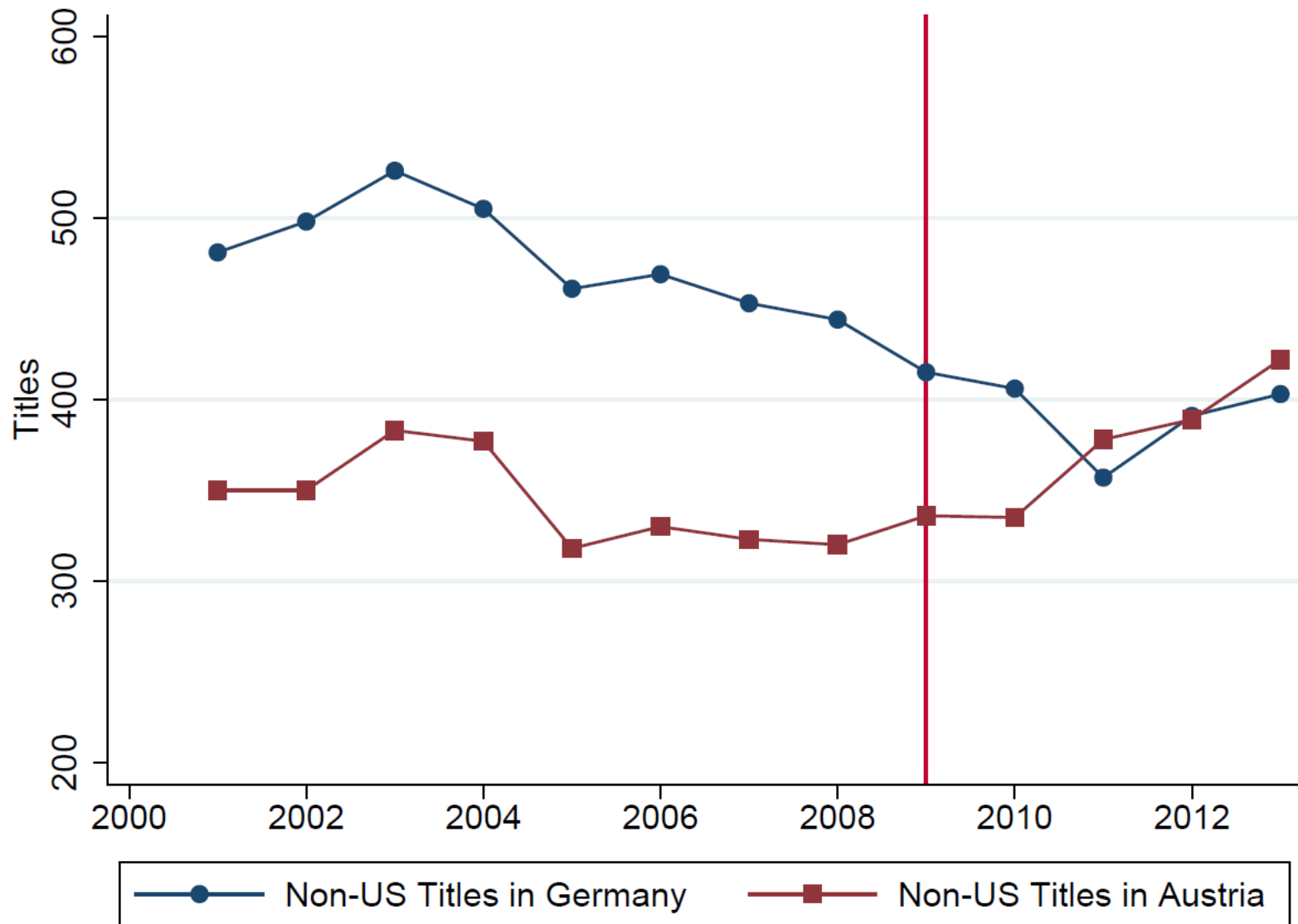


	Unique Songs	
	(1)	(2)
GEMA	49.788*	26.662
	(22.750)	(30.531)
Yearly Time Trend	.067	3.625
	(2.360)	(3.970)
DE	235.500**	270.365**
	(14.736)	(24.310)
AT	83.250**	85.740**
	(14.736)	(24.310)
GEMA*DE	-123.300**	-58.550
	(23.761)	(43.177)
GEMA*AT	14.150	18.775
	(23.761)	(43.177)
DE*T		-9.962+
		(5.614)
AT*T		-.712
		(5.614)
Constant	338.139**	325.687**
	(13.296)	(17.190)
Mean Y	460.603	460.603
N	39	39
Adj. R2	.888	.894



Dependent variable is the number of unique songs or artists each year on the top 75 singles charts in the US, Germany and Austria. + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

More Non-US music in Europe?



	Unique Songs	
	(1)	(2)
GEMA	35.063 (28.929)	-221.333** (67.045)
Yearly Time Trend	-1.067 (3.761)	-6.702* (3.175)
DE	158.163** (23.034)	141.417** (18.784)
GEMA*DE	-71.725+ (40.911)	145.983 (94.817)
DE*T	-6.404 (5.319)	-1.619 (4.490)
GEMA*T		29.302** (7.240)
GEMA*T*DE		-24.881* (10.239)
Constant	347.611** (16.287)	367.333** (13.282)
Mean Y	327.500	327.500
N	26	26
Adj. R2	.812	.892

Less unique domestic
(i.e. songs that don't
hit the US charts)
songs in Germany
compared to Austria

Dependent variable is the number of unique songs or artists each year on the top 75 singles charts in Germany and Austria in a sample that excludes imports (titles and artists appearing on US charts). See text for details. + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$. ²⁵

YouTube makes Europe look more like the US

	Song Overlap		
	DE-US (1)	AT-US (2)	DE-AT (3)
GEMA	-9.635** (1.263)	-3.008* (1.306)	1.472 (1.509)
Weekly Trend	.012** (.001)	.018** (.001)	.010** (.002)
Trend*GEMA	.023** (.003)	.008** (.003)	-.006+ (.003)
Constant	9.684** (.280)	8.825** (.288)	49.852** (.335)
Mean Overlap	14.8	14.7	49.6
N (Weeks)	621	624	621
Adj. R2	.605	.620	.112

Dependent variable is the number of song/artist matches on the top 75 singles charts across countries: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

Three times less overlap with the US in Germany than in Austria.

Three times slower convergence in Germany than in Austria.

Small overall trend (8 years for full convergence).

YouTube speeds up the hit cycle

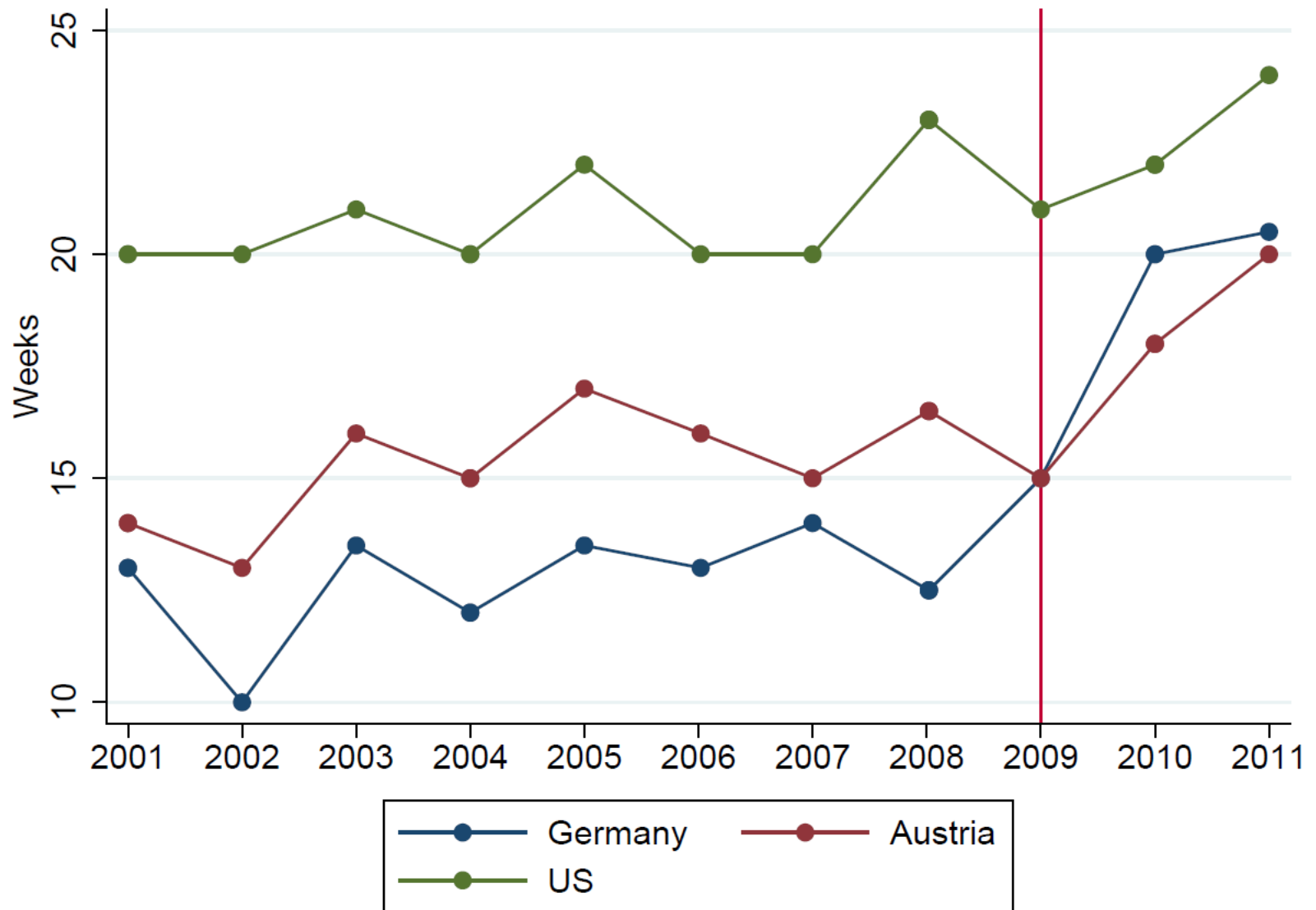
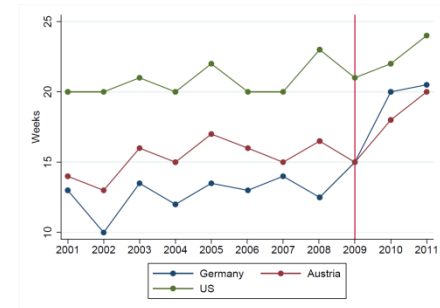


Table 4: Difference in Weeks Onto and On Top Charts, Germany-Austria

	Time Onto Chart		Survival Time	
	(1)	(2)	(3)	(4)
GEMA	.873 (1.403)	−3.567 (6.159)	2.278** (.713)	−3.201 (3.126)
Weekly Trend	.005 (.004)	.004 (.004)	.001 (.002)	.000 (.002)
Trend*GEMA		.009 (.013)		.012+ (.006)
Constant	−1.585+ (.870)	−1.418 (.899)	−2.292** (.443)	−2.086** (.457)
Mean Difference	.239	.239	−.880	−.880
N	835	835	835	835
Adj. R2	.010	.009	.042	.045

Dependent variable is the number of artist matches on the top 75 singles charts across countries: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.



Conclusions and implications

1/ Giving content away for free does not decrease sales, but can increase sales

- Even if firms cannot control how intensely consumers sample (in contrast to radio and MTV)
- Implications for copyright (tons of videos on YouTube are derivative works, most of which identify our effects)

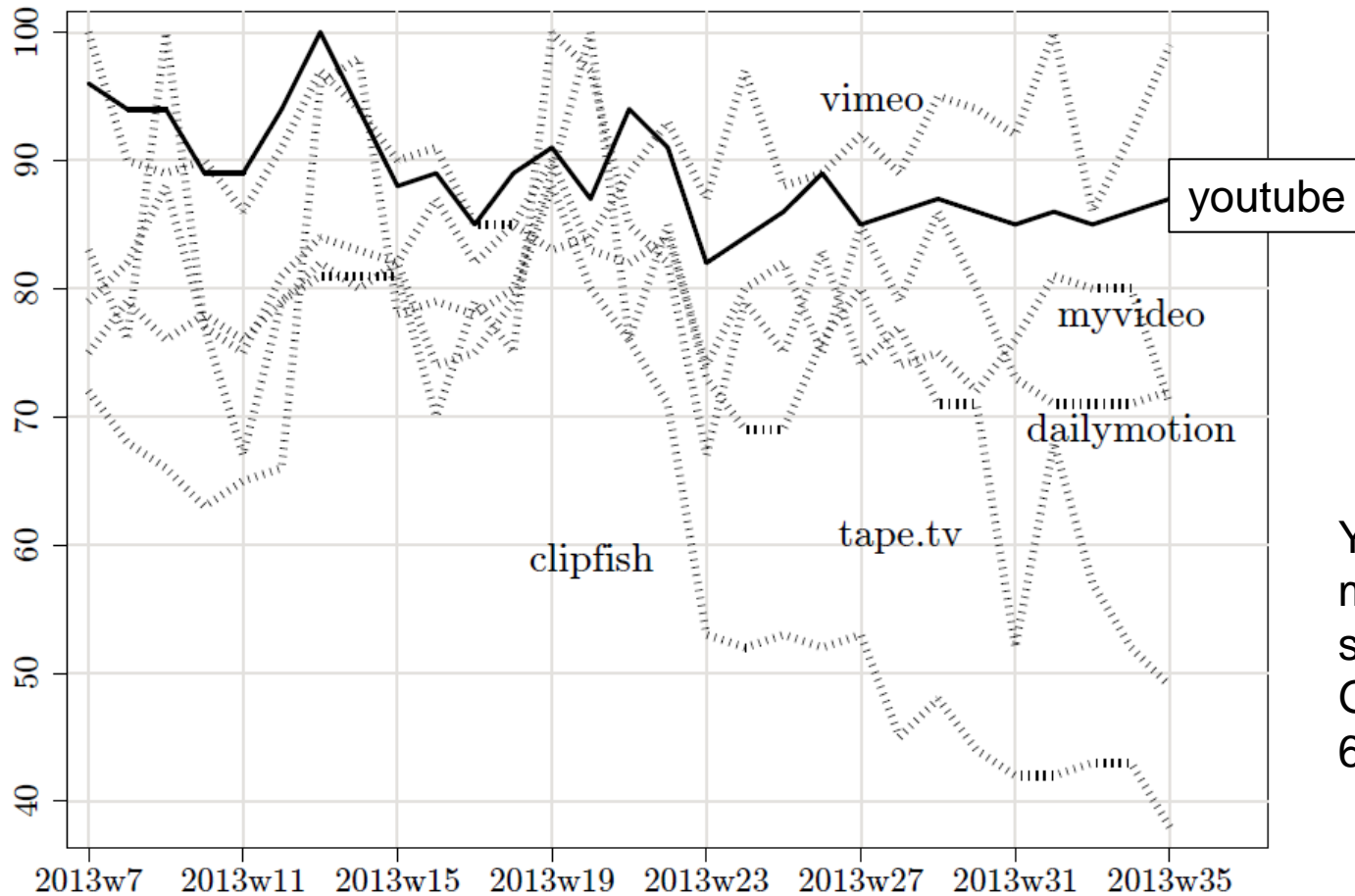
2/ YouTube promotes the superstar effect, but effect sizes are modest, suggesting that YouTube will not drive out the market for local music

- Faster turnover on popular charts and spread of international superstars can be seen as beneficial as they increase variety and quality
- Notion of “disposable” music. Faster cycles may lead to lower average quality

Thank you

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Google Trends: Videoportals in Germany



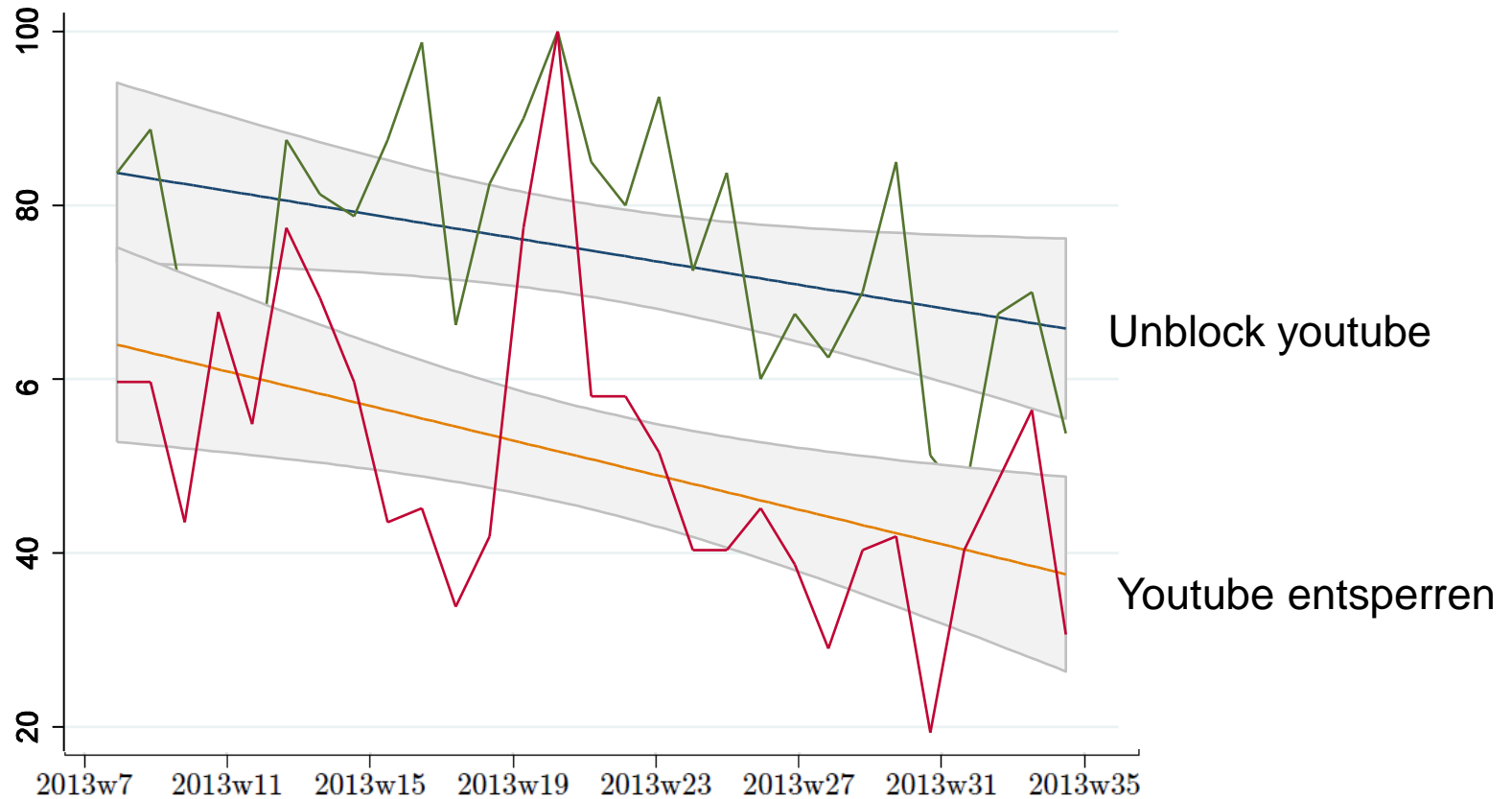
Youtube
market
share in
Germany:
60%

Weekly Relative Search Volume on Google in Germany

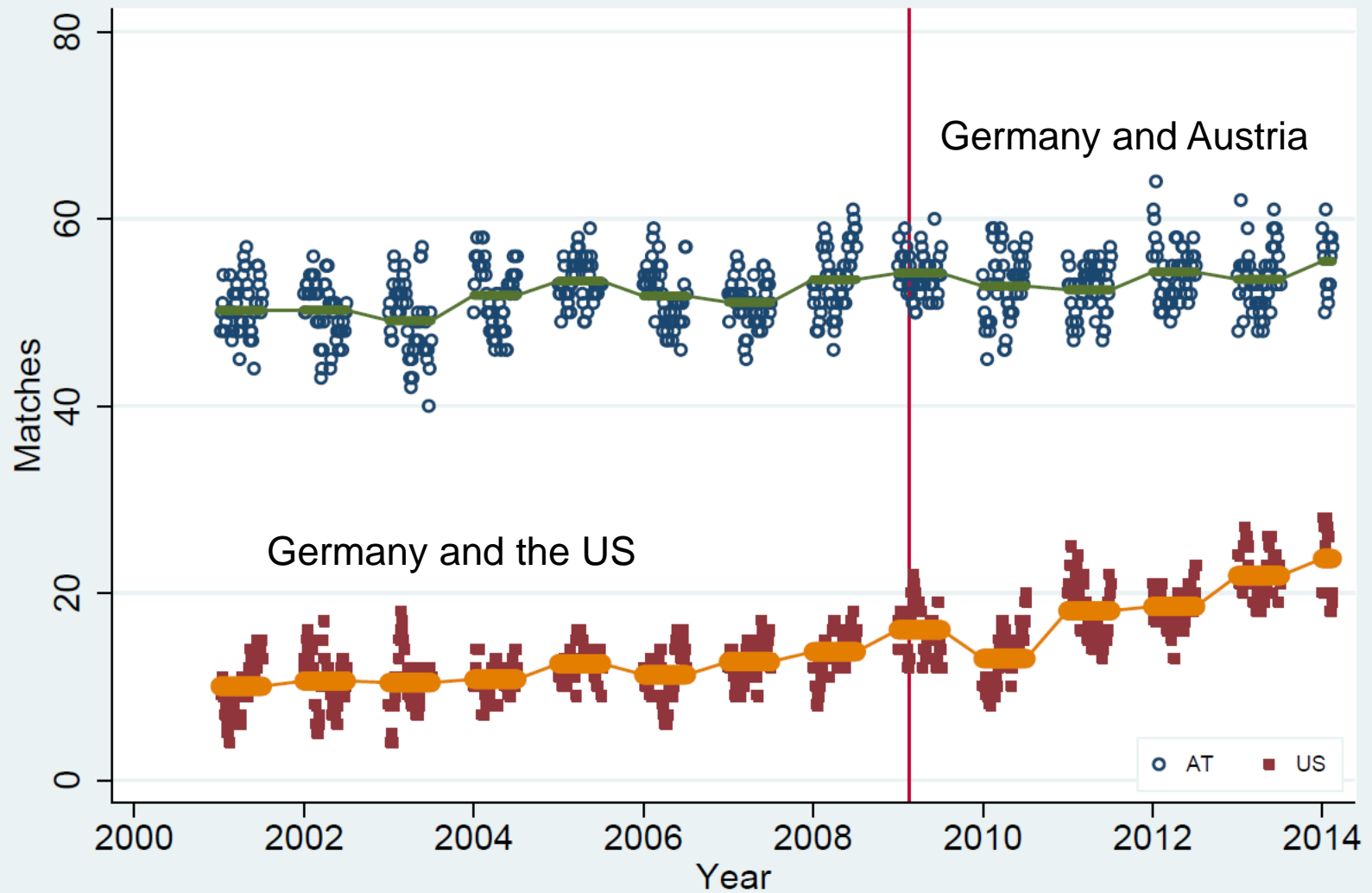
— Search Volume for 'youtube'

... Search Volume for 'clipfish', 'dailymotion', 'myvideo', 'tape.tv', 'vimeo'

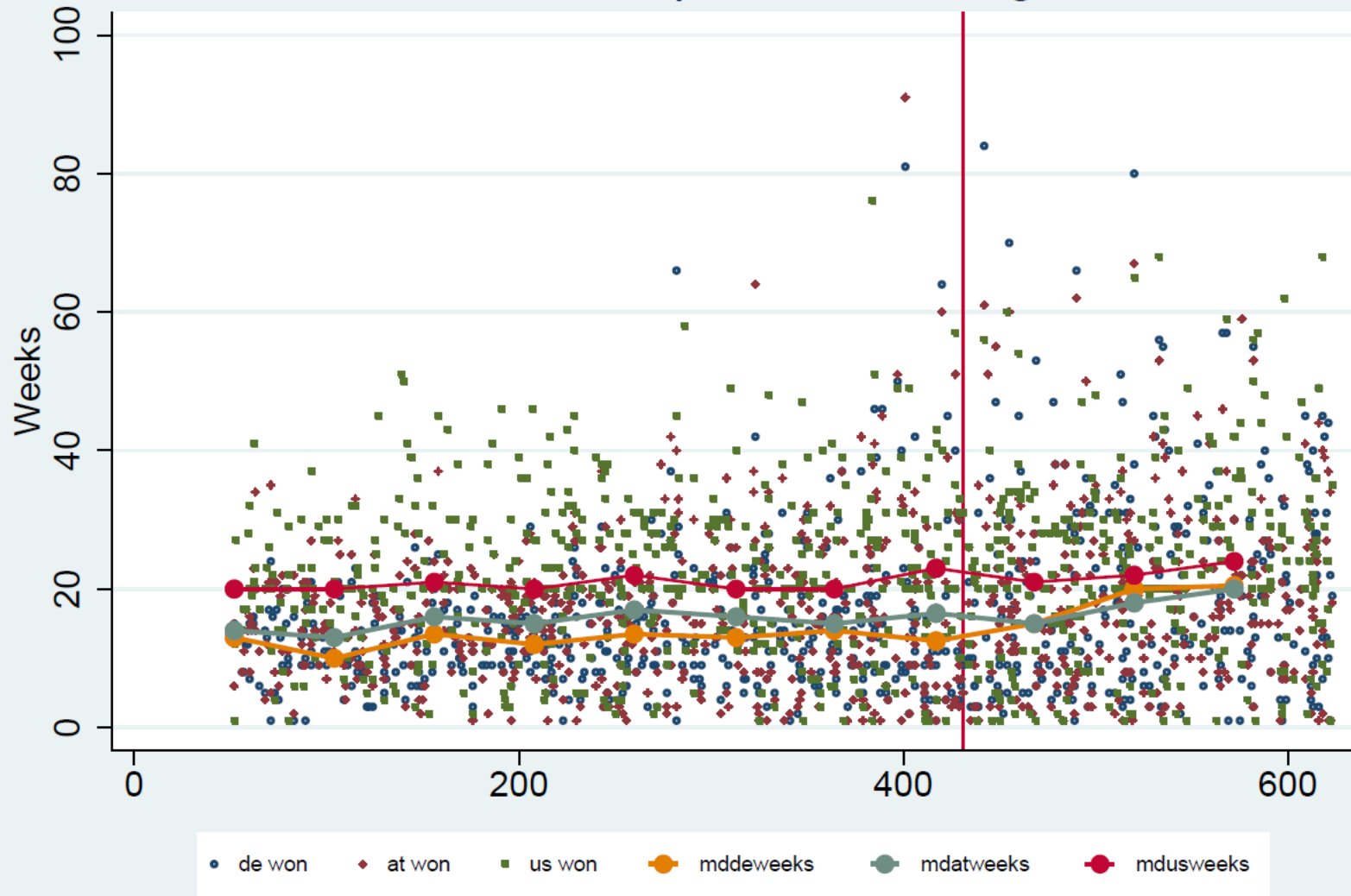
Google Trends: 'Unblock YouTube'



Top 75 Singles Title Matches



Weeks On Top 75 Chart, Singles



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