



LANGUAGE, COPYRIGHT AND GEOGRAPHIC SEGMENTATION IN THE EU DIGITAL SINGLE MARKET: THE CASE OF APPLE ITUNES

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MOTIVATION

- Provide empirical evidence on the extent of **market segmentation** in EU
- Determine **supply and demand** drivers of segmentation
- In EU: **28 copyright territories & management regimes** → Cross-border trade costs and geographical market segmentation
- **Art 20 EU Services Directive** prohibits geographical segmentation, unless there are objective reasons: copyright ?
- Two **research questions**:
 - To what extent do **borders** still constitute an obstacle to digital music & film?
 - What is the role of **copyright** and other factors in these obstacles?

THE DATA: ITUNES MUSIC & FILM DOWNLOADS

- iTunes → market leader. Around **60%** market share
- **Top-300** for songs, albums and films in all EU27 on a given day. Extension for films based on director's name
- Collect **availability** data of each item in all EU27, **price and publisher data**
- Add meta-tags: **country of origin** and **language** of artist
- Product differentiation: identification of **different versions** of the same product (radio version, deluxe album edition, language versions of films...)

Table 1A: Availability distribution for songs, albums and films

#countries available	SONGS				ALBUMS				FILMS			
	Identical versions		Different versions		Identical versions		Different versions		First sample		Second sample	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	489	8.2%	231	6.1%	374	7.8%	327	7.6%	302	15.2%	780	11.9%
2	359	6.0%	166	4.4%	329	6.8%	263	6.1%	282	14.2%	1,196	18.2%
3	233	3.9%	117	3.1%	141	2.9%	117	2.7%	164	8.3%	504	7.7%
4	43	0.7%	19	0.5%	27	0.6%	12	0.3%	63	3.2%	352	5.4%
5	26	0.4%	10	0.3%	28	0.6%	20	0.5%	45	2.3%	277	4.2%
6	60	1.0%	25	0.7%	36	0.7%	22	0.5%	54	2.7%	213	3.2%
7	37	0.6%	18	0.5%	20	0.4%	15	0.3%	42	2.1%	193	2.9%
8	36	0.6%	17	0.4%	26	0.5%	23	0.5%	27	1.4%	169	2.6%
9	48	0.8%	21	0.6%	20	0.4%	13	0.3%	33	1.7%	157	2.4%
10	48	0.8%	23	0.6%	31	0.6%	24	0.6%	31	1.6%	119	1.8%
11	39	0.7%	22	0.6%	33	0.7%	26	0.6%	32	1.6%	124	1.9%
12	79	1.3%	29	0.8%	30	0.6%	18	0.4%	42	2.1%	157	2.4%
13	64	1.1%	27	0.7%	37	0.8%	28	0.6%	35	1.8%	144	2.2%
14	56	0.9%	33	0.9%	42	0.9%	28	0.6%	38	1.9%	101	1.5%
15	84	1.4%	45	1.2%	51	1.1%	44	1.0%	47	2.4%	92	1.4%
16	45	0.8%	21	0.6%	29	0.6%	23	0.5%	38	1.9%	78	1.2%
17	43	0.7%	21	0.6%	31	0.6%	22	0.5%	74	3.7%	56	0.9%
18	64	1.1%	38	1.0%	31	0.6%	28	0.6%	52	2.6%	98	1.5%
19	43	0.7%	21	0.6%	30	0.6%	24	0.6%	69	3.5%	95	1.4%
20	55	0.9%	31	0.8%	33	0.7%	27	0.6%	69	3.5%	75	1.1%
21	84	1.4%	55	1.4%	68	1.4%	53	1.2%	167	8.4%	96	1.5%
22	87	1.5%	51	1.3%	67	1.4%	55	1.3%	79	4.0%	130	2.0%
23	198	3.3%	131	3.4%	111	2.3%	94	2.2%	72	3.6%	139	2.1%
24	242	4.0%	162	4.3%	182	3.8%	157	3.6%	42	2.1%	225	3.4%
25	398	6.6%	273	7.2%	258	5.4%	225	5.2%	51	2.6%	332	5.1%
26	325	5.4%	226	5.9%	253	5.2%	228	5.3%	34	1.7%	646	9.8%
27	2708	45.2%	1967	51.8%	2504	51.9%	2406	55.7%				
Total Availability	5993	100.0%	3800	100.0%	4822	100.0%	4322	100.0%	1984	100.0%	6548	100%
		73.1%		79.3%		75.7%		78.0%		41.5%		38.4%

Distribution of music availability

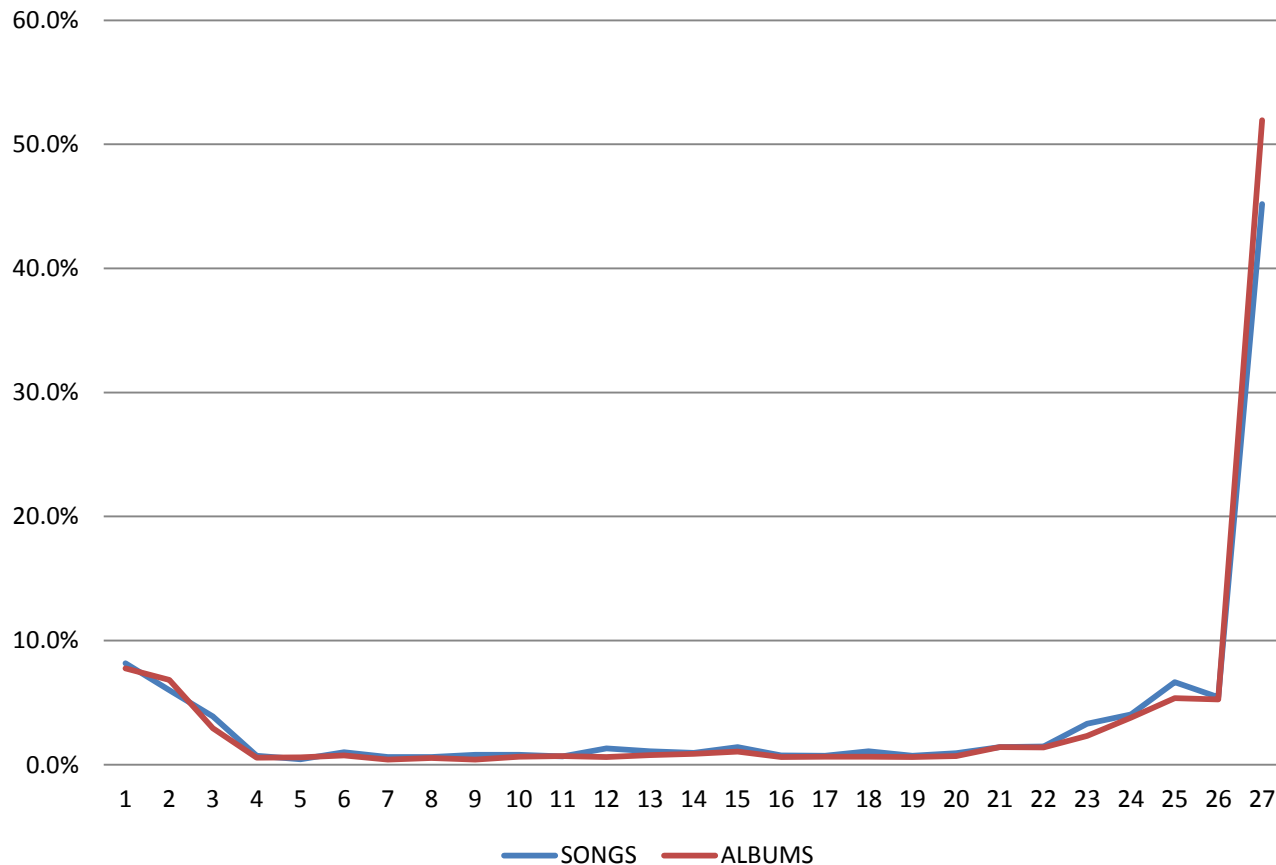


Table 2.1: Supply of songs (number of songs from CoO available in CoD)

CoO >	AT	BE	DE	DK	ES	FI	FR	GB	GR	IE	IT	LU	NL	PL	PT	RO	SE	US	ROW
CoD																			
AT	10	44	93	39	49	88	55	297	50	43	81	2	59	31	12	60	57	652	370
BE	7	52	92	48	50	89	82	334	49	48	72	2	74	32	11	63	61	730	354
DE	8	41	89	39	47	92	54	277	49	43	80	2	59	31	12	59	57	633	358
DK	5	42	83	86	48	97	65	323	49	47	63	2	55	31	11	64	75	715	351
ES	6	44	89	48	60	88	64	332	47	48	65	2	59	29	12	64	57	712	394
FI	7	44	85	52	47	109	65	326	50	47	72	2	56	31	11	64	78	719	353
FR	5	41	87	43	45	80	76	305	49	46	72	2	53	32	12	63	53	700	350
GB	6	38	81	34	43	77	53	292	52	47	66	2	47	30	11	64	50	588	320
GR	7	35	82	47	50	90	50	338	58	45	67	2	61	32	11	65	57	721	352
IE	6	41	85	44	46	89	54	307	47	39	65	2	52	31	11	64	52	641	331
IT	6	42	86	44	49	88	61	328	46	45	82	2	56	30	11	58	60	700	346
LU	6	52	85	48	49	89	83	340	49	46	69	2	72	32	9	62	60	723	364
NL	7	48	92	46	50	89	62	331	48	47	80	2	79	33	12	62	63	720	337
PL	6	32	86	46	48	90	46	331	47	43	63	2	57	34	7	59	55	712	365
PT	8	45	86	50	53	90	64	338	48	48	78	2	66	33	19	66	63	722	370
RO	6	34	85	48	46	88	46	326	45	45	64	2	63	31	11	74	59	704	370
SE	6	41	85	52	46	99	63	301	49	41	61	2	55	31	11	64	85	681	326

GROUPS OF COUNTRIES

- Austria – Germany- Luxembourg
- France – Belgium – Netherlands
- Denmark – Sweden – Finland
- Latvia – Lithuania – Poland – Estonia
- Czech Republic – Romania – Hungary – Slovakia
- Greece – Cyprus

METHODOLOGY: THE GRAVITY MODEL

- **Supply side availability:** OLS (country level) and Probit (product level)

$$lAvail_{ij} = \beta_0 + \beta_1 ldist_{ij} + \beta_2 comlang_{ij} + \beta_3 home_{ij} + \beta_4 eng_{ij} + \eta_i + \eta_j + \varepsilon_{ij}$$

$lAvail_{ij}$: log of share of songs from country i available in country j

$ldist_{ij}$: log of the geographical distance between countries i and j

$Comlang_{ij}$: dummy variable =1 if countries i and j share a common language

$Home_{ij}$: dummy variable =1 if country and origin are the same

Eng_{ij} : dummy variable =1 if the language of the country of origin is English

η_i, η_j : country fixed effects dummies

METHODOLOGY: THE GRAVITY MODEL

- **Demand:** OLS at country and product level

$$avg_lrank_{ij} = \beta_0 + \beta_1 ldist_{ij} + \beta_2 comlang_{ij} + \beta_3 home_{ij} + \beta_4 eng_{ij} + \eta_i + \eta_j + \varepsilon_{ij}$$

avg_lrank_{ij} : Average log of the inverse rank of songs or albums in country j

- **Sales:** OLS and Probit

$$lprice_{ij} = \beta_0 + \beta_1 ldist_{ij} + \beta_2 comlang_{ij} + \beta_3 home_{ij} + \beta_4 lrank_{ij} + \eta_i + \eta_j + \eta_p + \varepsilon_{ij}$$

$lprice_{ij}$: Log of the absolute price of song from country i in country j

η_p : Publisher fixed effects

Table 5.1: Supply side availability regressions							
VARIABLES	----- OLS at country level -----			----- Probit at product level -----			
	Songs	Albums	Films	Songs	Albums	Films	
	ldistance	-0.0089 (0.006)	-0.0167*** (0.005)	-0.0600 (0.089)	0.0071 (0.011)	-0.1208*** (0.010)	-0.0545** (0.026)
comlang	0.0514*** (0.016)	0.0459*** (0.013)		-0.6773*** (0.017)	0.1067*** (0.022)		
home	0.1221*** (0.020)	0.0670*** (0.017)	1.3902*** (0.213)	0.6482*** (0.042)	0.0769* (0.041)	1.7906*** (0.071)	
Contig			0.4170*** (0.117)			0.6084*** (0.045)	
English						0.3694*** (0.027)	
Constant	-0.4522*** (0.045)	-0.0044 (0.050)	-1.1553* (0.664)	0.6401*** (0.099)	2.1263*** (0.092)	-0.2130 (0.235)	
Observations	756	756	316	78,543	107,271	53,591	
R-squared	0.882	0.811	0.861				

Standard errors in parentheses. All regressions with CoO and CoD fixed effects

Table 5.2: Consumer demand regressions (OLS, dependant variable = average of the log ranks)

VARIABLES	----- country level -----			----- product level, product fe -----		
	Songs	Albums	Films	Songs	Albums	Films
ldistance	-0.0471** (0.020)	-0.0555*** (0.019)	-0.1835 (0.231)	-0.0235* (0.013)	-0.0707*** (0.012)	-0.1219 (0.085)
home	3.3246*** (0.065)	2.9891*** (0.065)	1.8621*** (0.555)	2.7504*** (0.069)	2.3560*** (0.061)	0.9751*** (0.201)
comlang	0.3616*** (0.050)	0.3110*** (0.050)		0.4180*** (0.029)	0.2686*** (0.024)	
Contiguity			0.0868 (0.305)			0.2484* (0.137)
LoO= English				2.7234*** (0.072)	-0.0018 (0.169)	-1.1350 (0.840)
Constant	0.4549*** (0.146)	0.3961*** (0.145)	2.3480 (1.728)	-4.5382*** (0.472)	0.6987*** (0.179)	2.0176** (0.980)
Product fe				Yes	Yes	Yes
Observations	756	756	316	53,625	64,716	20,546
R-squared	0.884	0.863	0.563	0.409	0.382	0.488

Standard errors in parentheses. All regressions with CoO and CoD fixed effects. *** p<0.01, ** p<0.05, * p<0.1

Table 5.3: Supply (availability) and consumer demand for media products (country level OLS)

VARIABLES	Songs		Albums		Films	
	Availability	Cons dem	Availability	Cons dem	Availability	Cons dem
ldistance	-0.0089 (0.006)	-0.0471** (0.020)	-0.0167*** (0.005)	-0.0555*** (0.019)	-0.0600 (0.089)	-0.1835 (0.231)
comlang	0.0514*** (0.016)	3.3246*** (0.065)	0.0459*** (0.013)	0.3110*** (0.050)		
home	0.1221*** (0.020)	0.3616*** (0.050)	0.0670*** (0.017)	2.9891*** (0.065)	1.3902*** (0.213)	1.8621*** (0.555)
Contig					0.4170*** (0.117)	0.0868 (0.305)
Constant	-0.4522*** (0.045)	0.4549*** (0.146)	-0.0044 (0.050)	0.3961*** (0.145)	-1.1553* (0.664)	2.3480 (1.728)
Observations	756	756	756	756	316	316
R-squared	0.882	0.884	0.811	0.863	0.861	0.563

*** p<0.01, ** p<0.05, * p<0.1. All regressions with CoO and CoD fe. Films: origin is considered to be the first country c

Commercial strategy or copyright?

Different versions

# versions	# songs	%
2	1125	77.48%
3	195	13.43%
4	76	5.23%
5	22	1.52%
6	17	1.17%
7	12	0.83%
8	0	0.00%
9	2	0.14%
10	2	0.14%
11	1	0.07%
Total	1452	100%

# versions	# albums	%
2	181	84.58%
3	27	12.62%
4	2	0.93%
5	4	1.87%
Total	214	100.00%

Alternative versions: EP; Single version; Radio Edit; Original Extended Mix; Pop Version; Video Version; Remix; Dance Version

Table 6. Availability of versions. Songs

Country	SONGS			VERSIONS		
	At least 1 version is not available	Nr songs with several versions available	%	Nr existent versions	Nr available versions	Ratio
AT	170	1,148	14.81%	2,796	2,472	88.41%
BE	163	1,219	13.37%	2,965	2,677	90.29%
DE	194	1,134	17.11%	2,766	2,392	86.48%
DK	177	1,207	14.66%	2,926	2,623	89.64%
ES	146	1,160	12.59%	2,803	2,549	90.94%
FI	171	1,209	14.14%	2,934	2,634	89.78%
FR	179	1,125	15.91%	2,736	2,401	87.76%
GB	196	1,028	19.07%	2,483	2,121	85.42%
GR	159	1,163	13.67%	2,824	2,533	89.70%
IE	188	1,093	17.20%	2,654	2,296	86.51%
IT	161	1,142	14.10%	2,765	2,471	89.37%
LU	168	1,210	13.88%	2,942	2,646	89.94%
NL	166	1,204	13.79%	2,922	2,633	90.11%
PL	158	1,142	13.84%	2,759	2,493	90.36%
PT	158	1,203	13.13%	2,912	2,622	90.04%
RO	167	1,153	14.48%	2,807	2,502	89.13%
SE	198	1,194	16.58%	2,896	2,533	87.47%

Table 7. Availability of versions. Albums

Country	ALBUMS			VERSIONS		
	At least 1 version is not available	# albums with several versions	%	# available versions	# existent versions	Ratio available/existent
AT	72	202	35.64%	364	445	81.80%
BE	60	203	29.56%	381	447	85.23%
DE	83	198	41.92%	347	437	79.41%
DK	68	198	34.34%	364	439	82.92%
ES	52	199	26.13%	382	439	87.02%
FI	63	200	31.50%	374	442	84.62%
FR	66	195	33.85%	355	428	82.94%
GB	75	192	39.06%	344	424	81.13%
GR	56	199	28.14%	377	438	86.07%
IE	56	196	28.57%	372	432	86.11%
IT	58	198	29.29%	374	437	85.58%
LU	54	205	26.34%	393	451	87.14%
NL	60	204	29.41%	384	449	85.52%
PL	59	204	28.92%	383	448	85.49%
PT	54	204	26.47%	389	449	86.64%
SE	71	196	36.22%	359	435	82.53%

Table 8. Digital availability of movies in theatres

Country	Movies not in iTunes	Total movies in cinemas	Ratio
AT	214	2,148	9.96%
BE	185	1,886	9.81%
BG	184	1,167	15.77%
CY	12	739	1.62%
CZ	371	1,634	22.71%
DE	397	2,485	15.98%
DK	171	1,682	10.17%
EE	373	1,594	23.40%
ES	569	1,922	29.60%
FI	141	1,589	8.87%
FR	484	2,407	20.11%
GB	213	3,094	6.88%
GR	91	966	9.42%
HU	372	1,519	24.49%
IE	168	2,630	6.39%
IT	483	1,868	25.86%
LT	184	1,173	15.69%
LU	55	1,338	4.11%
LV	154	1,148	13.41%
NL	355	1,925	18.44%
PL	616	1,852	33.26%
PT	579	1,495	38.73%
SE	257	1,704	15.08%
SI	412	1,444	28.53%
SK	386	1,481	26.06%

CONCLUSIONS

- **Why does market segmentation persist ?:**
 - 1. Supply side (availability):**
 - Availability: around 73-79% for music and 40% for films
 - Fragmented copyright regime and imperfect pan-EU licensing
 - Considerable degree of product differentiation and price discrimination
 - Commercial strategies that piggy back on CR
 - 2. Demand side (sales):**
 - Language, including English
 - Home bias and preference for domestic productions
 - Groups of countries with stronger cultural links
- **Next steps:**
 - Producer and consumer welfare effect (Aguiar & Waldfogel, 2014)
 - Collection of data on long tail and CR