

## LANGUAGE, COPYRIGHT AND GEOGRAPHIC SEGMENTATION IN THE EU DIGITAL, SINGLE MARKET FOR MUSIC AND FILM

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ABSTRACT. The EU seeks to create a seamless online Digital Single Market for media products such as digital music and film. The territoriality of the copyright regime is often perceived as an obstacle that induces geographical segmentation. This paper provides empirical evidence on the extent of market segmentation in the EU on the supply side and measures the contribution of several drivers of this segmentation. We use data from the Apple iTunes country stores in 27 EU Member States. We find that availability of EU media products across country stores in the EU is hovering around 80 per cent for music and 40 per cent for films. Recent industry initiatives to reduce the transaction costs of making digital music available across borders have resulted in a reasonably wide availability though still short of the 100 per cent mark. Supply side factors including copyright-related trade costs probably still play a role in music though we can only infer this indirectly in the absence of data on copyright licensing arrangements at product level. Commercial strategies and territorial restrictions in distribution agreements reduce film availability, more so than copyright issues. We also find evidence of price differentiation across iTunes EU country stores.

### 1. INTRODUCTION

The EU Services Directive (2006)<sup>1</sup> seeks to make all services available in all EU Member States without geographical limitations, including online services such as digital media downloads on the internet. Article 20 of the Services Directive explicitly prohibits price differentiation and availability restrictions between Member States - unless there are objective reasons to do so. It is often claimed that the territoriality of copyright is an objective reason. The EU Copyright Directive (2001)<sup>2</sup> has to some extent harmonized copyright law between Member States but it remains essentially national law. In practice, every Member State has its own Copyright Management Societies (CMS). Contrary to sales of physical

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The views and opinions expressed in this paper are the authors' and should not be attributed to the JRC or the European Commission.

<sup>1</sup>See [http://ec.europa.eu/internal\\_market/services/services-dir/proposal\\_en.htm](http://ec.europa.eu/internal_market/services/services-dir/proposal_en.htm)

<sup>2</sup>See [http://en.wikipedia.org/wiki/Copyright\\_Directive](http://en.wikipedia.org/wiki/Copyright_Directive)

media products,<sup>3</sup> music labels who want to sell an online digital version of a copyrighted media product in another Member State should clear copyright on this product with the copyright management authorities in that country. This creates a new source of trade costs for online digital media sales across borders, compared to selling physical media products across borders.

Following a European Commission (2005) recommendation, the music industry has taken initiatives to try to overcome these trade costs.<sup>4</sup> Music labels and Copyright Management Societies (CMS) have bundled large volumes of repertoire together and make them available with pan-European or global copyright licenses that cover many European countries. Major labels have withdrawn copyright management from national CMS for Anglo-American and Latin repertoire and vested it in newly established organizations that perform this function. Smaller music labels have grouped together to clear their online copyrights through another organization, Merlin. Still, some CMS are not members of these wider groupings and keep issuing national licenses (Dyson, 2013). As a result, a significant part of the music repertoire available in EU Member States may still be subject to copyright-related cross-border trade barriers. The situation is different for films. There is no geographical fragmentation at the level of acquisition of rights because film producers usually hold all worldwide rights to their films (Mazziotti and Simonelli, 2016). Geographical fragmentation occurs in the commercial exercise of rights as producers enter into exclusive national distribution agreements with bricks & mortar cinemas and with TV networks that account for the bulk of film revenue. These vertical arrangements between rights holders and distributors create incentives for the latter to invest in film promotion campaigns in their territory (Langus et al., 2014). On the other hand it creates barriers to online cross-border access for online distributors, even when they have a multi-territorial presence for instance in the case of Netflix (Batikas et al, 2015).

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<sup>3</sup>For physical media products, copyright is exhausted at the point of sale. This is not the case for digital media products where copyright continues to put restrictions on the use of the sold product. For instance, buyers are not allowed to sell it on a second-hand market.

<sup>4</sup>The recent EU Directive 2014/26 on collective management of copyright and multi-territorial licensing takes another step in this direction. It is of course too early to assess the impact of this new Directive.

Besides legal and contractual copyright-related constraints on the supply side, demand side factors such as consumer preferences linked to language<sup>5</sup> play a role too in the geographical segmentation of music and film markets in the EU.

The purpose of this study is twofold. First, it seeks to fill a gap in empirical evidence on the extent of market fragmentation for digital music and film in the EU on the supply (availability) side and the extent of price variation across countries. Second, it investigates to what extent supply side factors, such as the legal and commercial use of the copyright regime, and demand factors related to consumer preferences, contribute to this geographical segmentation. Earlier work on cross-border digital music trade in the EU (Gomez-Herrera et al. 2014) was based on detailed consumer demand (sales) data but did not include supply side availability. We do not address the potential welfare effects of territorial constraints in music and film. This is covered by Aguiar and Waldfogel (2014a).

Our findings revolve around two issues, cross-border availability and pricing of digital music and films. We find that in August 2013 there was still substantial variation in availability in the iTunes country stores across the EU DSM. Less than half of all song tracks and music albums are available in all EU27 country stores.

We find that overall cross-border availability of digital music in the EU falls short of the fully open DSM ideal but nevertheless it is rather high at 80 per cent of what it could be in the absence of any cross-border restrictions. Recent initiatives to reduce copyright-related cross-border trade costs seem to be bearing fruit as much music is already available across all Member States.<sup>6</sup> We also find that geo-blocking or the presence of cross-border access restrictions induces geographic market segmentation and significant price differentiation across the EU. About 45 per cent of song tracks and 70 per cent of albums are subject to price differentiation in at least one country store. Prices are affected by sales rank which points towards price discrimination. Aguiar & Waldfogel

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<sup>5</sup>At the latest count, the EU28 has 24 official languages and at least twice that number of minority regional languages. See [http://en.wikipedia.org/wiki/Languages\\_of\\_the\\_European\\_Union](http://en.wikipedia.org/wiki/Languages_of_the_European_Union)

<sup>6</sup>In October 2009, the participants in the Commission's Online Roundtable Conference released a joint statement in which they agreed to explore in the short term "the development of efficient licensing platforms" including multi-territorial licenses for online performing and mechanical rights and deliver pan-European/multi-repertoire licenses to commercial users.

(2014a) estimate that lifting remaining cross-border variety restrictions on digital music would increase consumer welfare in Europe by about 3% on average and producer welfare by 1.8%. Their calculations do not cover price differences. The EU copyright reform proposals that are currently on the table in the European Parliament and Council will not substantially change that situation. Cross-border portability of subscriptions to music services makes cross-border access easier for travelling consumers but not for residents. One can only expect that the increasing dominance of global music streaming services will motivate music publishers to join international copyright management societies and make their catalogues available on a global scale.

The situation is worse for digital film downloads where overall cross-border availability in iTunes is estimated at 40 per cent only. Cross-border availability is equally poor for film streaming (Batikas et al, 2015). Price differentiation is less prevalent in films compared to music. This finding maybe a first sight is somewhat surprising since the film copyright regime is not subject to territorial restrictions. The explanation should therefore be sought in the commercial exercise of copyright through exclusive territorial licensing. Furthermore, translation costs and promotion campaigns in the bricks & mortar cinema circuit may account for higher fixed border trade costs compared to music.

The current EU copyright reform proposals will not significantly change this situation. Portability of subscriptions only benefits travellers, not residents. Changes in copyright law may affect the acquisition of rights but not the main obstacle to cross-border access and availability of films, the commercial exercise of copyright. Competition policy may address that commercial behaviour. In this respect, a recent initiative by the European Commission as competition authority (agreement with Paramount, reference) may be a step in the right direction.

This paper is structured as follows. Section 2 discusses the data sources. Section 3 describes the cross-border availability for music in Europe. Section 4 explores to what extent is there price differentiation across iTunes country stores in the EU27. Section 5 replicates the analysis for films in iTunes. Finally, section 6 presents some conclusions and future lines of research.

## 2. THE MUSIC DATA

iTunes is the market leader in the EU for legal digital media downloads, especially for music. It has online country stores in 27 EU Member States, all separated by digital walls that prevent users located in one country from downloading a media product from another iTunes country store.<sup>7</sup> iTunes publishes a daily updated list of top-300 products for songs, albums and films in every country store.<sup>8</sup> We combined the Top-300 lists for each of these three products on a given day in August 2013 in the 27 iTunes EU country stores into a long pan-EU list and checked prices and availability of this long list of products in each EU country store. A product is assumed to be available in a country store when a search query for it in that store, either by iTunes ID number or by title of the product, returns information on title, artist and price. Many songs and albums are sold in different versions. For instance, an album can come in a standard or in a deluxe version; songs can come in radio, “featuring”, mix and extended play versions. We treat different versions of the same song/album as identical products. The sample contains 3,800 songs and 4,822 albums. For the songs/albums among the top 300 in one country but not another in August 2013, we then query the iTunes store for each country to determine whether the song is available in each of the different countries.

We collected data on titles, artists, labels, ranking in the Top-300 and prices for each song track and music album. We added two meta-tags to the iTunes data. We identify all music artists by their country of origin and the language of their songs. Country of origin of the artist is defined as country of birth. Other possible criteria include the country of residence of the artist or his main market. As discussed in Gomez-Herrera et al. (2014) none of these three definitions is waterproof and are subject to potential biases. The country of birth criterion has been used in previous studies (Legrand, 2012). Artists can sing in more than one language. In that case we identify the language for each song or

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<sup>7</sup>This policy changed in late 2014; iTunes now publishes only the Top-100. iTunes does not provide streaming services for music (but Apple Music does) and film. For film, we only cover 26 Member States, not Romania where very few films are available.

<sup>8</sup>Regarding the frequency of iTunes charts updates, see for instance <http://www.gareth53.co.uk/blog/2009/10/how-itunes-charts-work.html>

album. Data for these tags were obtained from various internet sources such as Wikipedia and artists' home pages.

Obviously, the combined top-300 list across 27 countries is just a very small sample of the total number of songs and albums in the iTunes stores. In September 2014, iTunes claimed to have over 43 million music tracks in its worldwide catalogue. Still, as a result of power laws in online distribution the top-300 should represent a large share of total sales. We do not have data on the share of the top-300 in iTunes sales. Music download data from Nielsen Music that cover more than 90 per cent of the market for music downloads, including iTunes, (Gomez-Herrera et al., 2014) show that the top-300 songs represent between 30 and 40 per cent of annual digital music sales in a sample of 14 European countries in 2011. Annual shares will be considerably smaller than daily or weekly shares, because of the high turnover in the charts during the year. We can therefore safely assume that daily top-300's represent substantially more than half of all sales.

Independently of the representativeness of the sample, this is clearly a biased sampling method that favours more popular music that appears in the Top-300 in at least one country store. The long tail of the sales distribution is under-represented in this sample. This might affect our findings. To verify possible bias in the sampling we calculate the correlation between chart ranking and availability. We find a positive but weak correlation for music (+0.03) and film (+0.07) and conclude that the impact of sample bias on availability is sufficiently weak for the purpose of this research. The sample may however not be representative for availability in the long tail. We are unable to verify this with this small sample.

The catalogue of available products varies across EU iTunes stores. The label decides in which countries his product is made available and iTunes' digital walls enforce this geographical segmentation. The default option in iTunes is worldwide availability. Small labels who "manually" introduce their products in iTunes – possibly via aggregators - have to explicitly change that option if they want to restrict geographical availability to specific countries according to the iTunes guide for music sellers.<sup>9</sup> Large labels have their

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<sup>9</sup>See <https://itunesconnect.apple.com/docs/UsingiTunesProducerMusic.pdf> pages 26 and 34.

own agreements with iTunes that automate the introduction of products in the catalogue. Transaction costs to upload music on the iTunes website are low, with fixed annual fees of US\$ 10 for a song track and US\$ 30 for an album,<sup>10</sup> independently of the number of countries where it is made available. The marginal cost per country is zero. Consequently, internal iTunes costs will not affect geographic availability.

Apart from restrictions in cross-border availability, geo-blocking of cross-border access to iTunes stores in other countries enables music sellers to differentiate prices across countries. The pricing decision is, in principle, also taken by the label. According to the iTunes guide for music sellers, labels can freely choose where to make their music available as well as the price tier for that music, from the available price tiers pre-defined by iTunes. For song tracks, iTunes pre-defines three price tiers from which music sellers can choose (0.69, 0.99 and 1.29 €) with 1.29 € being the default and most frequently used price. Albums normally have a minimum price determined by the number of songs on the album. For music albums we have detected 108 price tiers in the data. However, TuneCore,<sup>11</sup> an iTunes aggregator that helps smaller labels to get their music on the iTunes website, points out that iTunes reserves the right to modify the pricing. Apple's 2009 stated intention to phase out price differentiation across EU country stores also suggests that it has leverage over pricing decisions. Large labels may have sufficient market power to negotiate prices with iTunes, especially for successful music. Labels sign a contract with iTunes that specifies the applicable pricing brackets and policies. Price differences across iTunes country stores may therefore be a combination of commercial choices both by the music seller and by Apple iTunes, enabled by the digital walls between iTunes country stores that prevent price arbitrage.

Only three EU iTunes country stores have price quotes in currencies other than the Euro: the UK (Pound sterling), Denmark (Danish kronor) and Sweden (Swedish kronor). Absolute prices will always differ at least a bit between Euro-denominated and other iTunes country stores because of exchange rates and rounding-off of price tiers to a convenient

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<sup>10</sup>See <http://www.tunecore.com/index/pricing>

<sup>11</sup>See [http://help.tunecore.com/app/answers/detail/a\\_id/37](http://help.tunecore.com/app/answers/detail/a_id/37)

figure. For the purpose of price differentiation calculations we allow a margin of 10 per cent between prices in Euro and in other currencies (converted into Euro) before we classify a non-Euro price observation as different from a Euro price, to account for exchange rate fluctuations and differences due to rounding-off of prices.

Concerning films, in a first round (August 2013) film data were collected in the same way as music data, by scanning the Top-300 of films in every EU iTunes store and combining this into a long list of 1,986 films. We added the country of production and classify different language versions of the same film as different versions of the same product, using the IMDB film database. 419 out of 1,986 films were co-produced by two or more countries; 745 were EU (co-) produced films. However, contrary to music, films can come in different language versions in different iTunes stores. It is often not easy to find a language version of a film in iTunes, especially when the translated title bears no resemblance to the original and because of differences in spelling of translations between iTunes and IMDB. A limited test sample suggested that, despite our best efforts, we missed out on many language versions available in country stores. We tried a new approach in a second data collection round in February 2015: we collected all films (in all languages) produced by all the directors in the original August 2013 sample of 1,986 films. We searched for availability of all titles associated with these directors in the iTunes EU country stores, irrespective of whether they appear in the top charts or not. This generated a sample of 6,548 original films. On average, they were available in 1.1 language versions per country store – in other words most films are available in only one language in each store.

### 3. CROSS-BORDER AVAILABILITY OF DIGITAL MUSIC

Standard trade models usually distinguish between the number of products available / supplied across borders (the extensive margin of trade) and, conditional on availability, consumer demand for these products (the intensive margin of trade). We look at the extensive margin only. We construct supply (availability) matrices for albums and songs, by country of origin (CoO) of the artist (for music), and by Country of Destination (CoD) (See Tables 2, 3 and 4 in Annex). The diagonal cells in these matrices represent domestic



availability and sales; off-diagonal cells represent cross-border availability and sales. Diagonal figures normally dominate but some off-diagonal figures are pretty high too, often for country pairs that share a language. We define an availability indicator as the ratio of actual over potential availability of products from a country of origin (CoO) in a country of destination (CoD). If the EU Digital Single Market were a perfectly open market, all digital media products would be available in all 27 countries and the ratio would peak at 100 per cent.

Table 1 presents the cumulative distribution of available songs and albums in the EU27. The overall availability index is around 79 per cent for songs and 78 per cent for albums. As Figure 1 shows, the availability distribution for music is clearly U-shaped. About 52 per cent of all songs in the sample and 56 per cent of all albums are available in all EU27. From there onwards availability quickly drops. However, at the other end of the distribution there is an upsurge again, with about 13 per cent of all song tracks and 15 per cent of albums being available  $\leq 3$  countries.

Table 1: Availability distribution for songs, albums and films

| # countries available | SONGS        |               | ALBUMS       |               | FILMS        |               |
|-----------------------|--------------|---------------|--------------|---------------|--------------|---------------|
|                       | Freq.        | %             | Freq.        | %             | Freq.        | %             |
| 1                     | 231          | 6.08%         | 327          | 7.57%         | 780          | 11.91%        |
| 2                     | 166          | 4.37%         | 263          | 6.09%         | 1,196        | 18.27%        |
| 3                     | 117          | 3.08%         | 117          | 2.71%         | 504          | 7.70%         |
| 4                     | 19           | 0.50%         | 12           | 0.28%         | 352          | 5.38%         |
| 5                     | 10           | 0.26%         | 20           | 0.46%         | 277          | 4.23%         |
| 6-10                  | 104          | 2.74%         | 97           | 2.24%         | 851          | 13.00%        |
| 11-20                 | 288          | 7.58%         | 268          | 6.20%         | 1,020        | 15.58%        |
| 21                    | 55           | 1.45%         | 53           | 1.23%         | 96           | 1.47%         |
| 22                    | 51           | 1.34%         | 55           | 1.27%         | 130          | 1.99%         |
| 23                    | 131          | 3.45%         | 94           | 2.17%         | 139          | 2.12%         |
| 24                    | 162          | 4.26%         | 157          | 3.63%         | 225          | 3.44%         |
| 25                    | 273          | 7.18%         | 225          | 5.21%         | 332          | 5.07%         |
| 26                    | 226          | 5.95%         | 228          | 5.28%         | 646          | 9.87%         |
| 27                    | 1,967        | 51.76%        | 2,406        | 55.67%        | 1            | 0.00%         |
| <b>Total</b>          | <b>3,800</b> | <b>100%</b>   | <b>4,322</b> | <b>100%</b>   | <b>6,549</b> | <b>100%</b>   |
| <b>Availability</b>   |              | <b>79.27%</b> |              | <b>78.03%</b> |              | <b>38.38%</b> |

Source: Apple iTunes and authors' own calculation

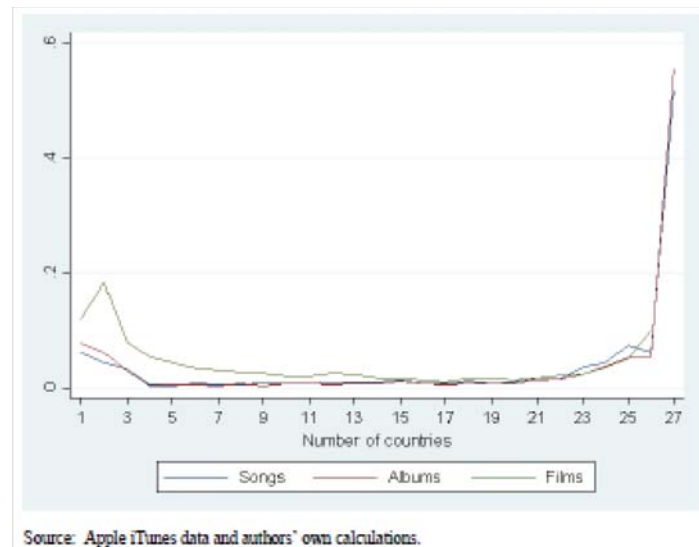


FIGURE 1. Availability distribution of music songs and albums

Tables 2 and 3 present the bilateral availability matrices with the number of music products by country of origin (CoO) and their availability in countries of destination (CoD). Reading the tables vertically, i.e. the number of products from a CoO available in the CoDs, we can deduce availability patterns across the EU. A few small MS with a relatively small number of songs and albums in iTunes have high availability ratios throughout the EU. German or French music is less widely spread than music from smaller MS while Finish or Austrian music seems to be less available almost everywhere. One would expect the highest availability in the home country market. This is mostly but not always true. For example, there are 89 songs from Germany available in Germany, but 93 in Austria, a German language country. A distinction has to be made between the number of songs or albums available from a CoO in a CoD and the total number of distinct products available from a CoO. Different (versions of) songs and albums may be available in different markets. For example, there are 401 songs from the UK in our data sample but only 292 of these are actually available in the UK (See Table 2). The countries with the highest number of UK songs in the iTunes store are Belgium and Portugal.

Table 2: Supply of songs (number of songs from CoO available in CoD)

| CoD/CoO>     | AT    | BE    | DE    | ES    | FI    | FR    | GB    | IT    | NL    | SE    | US    | TOTAL |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| AT           | 10    | 44    | 93    | 49    | 88    | 55    | 297   | 81    | 59    | 57    | 652   | 2,293 |
| BE           | 7     | 52    | 92    | 50    | 89    | 82    | 334   | 72    | 74    | 61    | 730   | 2,449 |
| DE           | 8     | 41    | 89    | 47    | 92    | 54    | 277   | 80    | 59    | 57    | 633   | 2,237 |
| ES           | 6     | 44    | 89    | 60    | 88    | 64    | 332   | 65    | 59    | 57    | 712   | 2,418 |
| FI           | 7     | 44    | 85    | 47    | 109   | 65    | 326   | 72    | 56    | 78    | 719   | 2,419 |
| FR           | 5     | 41    | 87    | 45    | 80    | 76    | 305   | 72    | 53    | 53    | 700   | 2,302 |
| GB           | 6     | 38    | 81    | 43    | 77    | 53    | 292   | 66    | 47    | 50    | 588   | 2,103 |
| IT           | 6     | 42    | 86    | 49    | 88    | 61    | 328   | 82    | 56    | 60    | 700   | 2,338 |
| NL           | 7     | 48    | 92    | 50    | 89    | 62    | 331   | 80    | 79    | 63    | 720   | 2,412 |
| SE           | 6     | 41    | 85    | 46    | 99    | 63    | 301   | 61    | 55    | 85    | 681   | 2,300 |
| Max #        | 10    | 52    | 93    | 60    | 109   | 82    | 338   | 82    | 79    | 85    | 730   |       |
| Share        | 0%    | 2%    | 4%    | 2%    | 3%    | 3%    | 12%   | 3%    | 3%    | 3%    | 26%   |       |
| Distinct #   | 12    | 62    | 132   | 65    | 109   | 98    | 401   | 90    | 99    | 106   | 832   |       |
| % English    | 33%   | 37%   | 42%   | 14%   | 13%   | 40%   | 94%   | 9%    | 58%   | 67%   | 94%   |       |
| Availability | 54.0% | 64.9% | 65.7% | 74.4% | 82.3% | 58.6% | 80.6% | 77.7% | 61.9% | 56.8% | 83.6% |       |

Source: Apple iTunes and authors' own calculations

Table 3: Supply of albums (number of albums available in CoD)

| CoD /CoO>  | AT    | BE    | DE    | ES    | FI    | FR    | GB    | IT    | NL    | SE    | US    | TOTAL |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| AT         | 28    | 33    | 158   | 106   | 117   | 110   | 421   | 113   | 65    | 81    | 678   | 3,083 |
| BE         | 21    | 49    | 137   | 100   | 122   | 118   | 424   | 110   | 84    | 83    | 705   | 3,147 |
| DE         | 24    | 33    | 156   | 100   | 121   | 110   | 414   | 107   | 66    | 83    | 680   | 3,085 |
| ES         | 22    | 37    | 136   | 113   | 120   | 120   | 429   | 109   | 70    | 87    | 690   | 3,106 |
| FI         | 21    | 35    | 136   | 105   | 134   | 122   | 428   | 107   | 66    | 103   | 691   | 3,130 |
| FR         | 22    | 41    | 131   | 101   | 117   | 123   | 416   | 106   | 63    | 84    | 701   | 3,037 |
| GB         | 19    | 33    | 128   | 98    | 110   | 111   | 416   | 99    | 60    | 74    | 667   | 2,980 |
| IT         | 17    | 36    | 135   | 102   | 118   | 114   | 431   | 116   | 65    | 83    | 677   | 3,034 |
| NL         | 23    | 47    | 137   | 102   | 119   | 122   | 423   | 106   | 85    | 90    | 704   | 3,139 |
| SE         | 20    | 33    | 127   | 104   | 123   | 123   | 423   | 101   | 67    | 108   | 691   | 3,082 |
| Max #      | 28    | 49    | 158   | 113   | 134   | 123   | 434   | 116   | 85    | 108   | 705   |       |
| Share      | 1%    | 1%    | 5%    | 3%    | 4%    | 4%    | 13%   | 3%    | 2%    | 3%    | 20%   |       |
| Distinct # | 30    | 56    | 193   | 126   | 143   | 148   | 508   | 134   | 99    | 118   | 805   |       |
| % English  | 27%   | 68%   | 27%   | 4%    | 22%   | 32%   | 97%   | 8%    | 67%   | 55%   | 97%   |       |
| Avail      | 70.6% | 63.8% | 69.4% | 80.2% | 83.1% | 76.0% | 83.8% | 77.8% | 68.1% | 71.6% | 85.3% |       |

Source: Apple iTunes and authors' own calculations

Language may play a role in music availability. This is obvious for English language music from the UK and the US that is widely available. This would lead us to expect that English-language songs from other countries would also easily spread. However, there is

no evidence for that. Correlation between the share of English-language music in total music supply from a country of origin and geographical availability of the country's music is actually negative (-0.36 for songs and -0.29 for albums). It looks as if only English-language music from native language artists in the UK, the US and Ireland is widely available. This hypothesis was also confirmed by Gomez-Herrera et al. (2014).

Reading the tables horizontally, i.e. where does the music available in a country come from, we find that the total number of songs and albums available is rather stable across countries – around 2,300 songs and 3,000 albums per country store. Songs of domestic origin represent only a very small share (1-4 per cent) of the available supply of music, except in the UK where domestic songs account for 12 per cent of the available supply. While the UK is a dominant supplier of music in the EU, it has relatively little (non-English) music from other EU CoO in its iTunes store. Close to 60 per cent of that supply comes from other EU countries, of which about 40 per cent non-English language supply. The dominant sources of song supply are the US with about 26 per cent, followed by 12 per cent from the UK. The remainder comes from the rest of the world, most of which will be English language music too. As a result, English language songs account for about two thirds of all music available. The situation is very similar for albums.

Germany, France and Sweden come in a second group with a 4-5 per cent share of available music supply. About 67 per cent of Swedish music is actually in English – closely followed by English-language songs from Denmark, France and Germany. Apart from the dominance and wider spread of English language music, there is no obvious pattern to be detected in availability. Relatively small countries with a small number of products in the iTunes store still manage to make it widely available across the EU while CoO with a larger supply do not score better. The largest supply is usually available in the home market but availability in other countries does not seem to follow obvious language, distance or market size related patterns.

## 4. GEO-BLOCKING AND PRICE DIFFERENTIATION IN DIGITAL MUSIC

Price differentiation in the Apple iTunes store has been investigated before. In April 2007, following a complaint by UK consumer organisation Which? that iTunes products were more expensive in the UK than in other EU iTunes stores, the European Commission sent a Statement of Objections to major record companies and Apple iTunes. The statement referred to alleged agreements between them that might violate the EU Treaty's rules prohibiting restrictive business practices (Article 81) and restrict consumer choice to buying music from the iTunes store in their country of residence. In January 2008, the Commission welcomed Apple's stated intentions to equalize prices between the UK and the rest of the European market over a period of six months. The Commission also acknowledged that it found no evidence that agreements between Apple and major record companies led to geographic fragmentation in availability among iTunes stores in the EU. Rather, the fragmentation of the copyright management regime in the EU enabled music sellers to price differentiate. As a result, the case was dropped.

In this section we explore the extent of price differentiation for identical products across the iTunes country stores. Price differentiation is made possible by the strict digital separation between national stores. Consumers from country A cannot download media products from the iTunes store in country B. Geographical price differences are the result of commercial strategies by the labels and/or Apple iTunes. The question is: what drives these strategies? We examine some descriptive statistics on the extent of price differentiation.

Table 4: Standard errors of prices within each song, album and film

|                        | <b>SONGS</b> | <b>ALBUMS</b> | <b>FILMS</b> |
|------------------------|--------------|---------------|--------------|
| Unweighted prices      | 0.237        | 0.227         | 0.277        |
| Prices weighted by GDP | 0.269        | 0.274         | 0.286        |

Source: Apple iTunes data and authors' own calculations.

Table 4 presents the variance of prices within each product. We define the modal price of each product as 1, and then report in Table 4 the standard error of these normalized prices for songs, albums and films. In the first row we treat each country as the same.

Then, given that countries actually differ in size, we also include in the second row the same results using GDP as a weight. We find evidence of price variation across countries.

We test a comprehensive price regression at the product level that includes cultural distance variables - language, geographical distance, home market effects- and sales rank. The latter could be considered a proxy for price elasticity. We also add country fixed effects to the equation. Table 5 shows the results for the OLS and Probit versions of the price regression. In the first case, the dependent variable is the logarithm of the absolute price level (converted into Euro); in the second case it is the probability that the price in a country store diverges from the mode price. The results have the expected signs and are statistically significant in most cases. More importantly, the coefficients are very low. In fact, a number of coefficients are zero (statistically insignificant). The positive rank coefficient in OLS suggests that prices go up with popularity, an indication of profit maximizing pricing behaviour by the labels. The fairly high positive coefficients on common language in the Probit equation suggest that there is considerable price differentiation between (neighbouring) countries that share a language and are thus more likely to trade music with each other.

Table 5: Price regressions

| VARIABLES       | OLS                   |                       |                       | Probit                              |                                      |                                     |
|-----------------|-----------------------|-----------------------|-----------------------|-------------------------------------|--------------------------------------|-------------------------------------|
|                 | Songs<br>Log Price    | Albums<br>Log Price   | Films<br>Log Price    | Songs<br>Price $\neq$ Mode<br>price | Albums<br>Price $\neq$ Mode<br>price | Films<br>Price $\neq$ Mode<br>price |
| Log Distance    | -0.0116***<br>(0.001) | 0.0059***<br>(0.001)  | -0.0475***<br>(0.008) | 0.0055<br>(0.022)                   | -0.0828***<br>(0.015)                | 0.0622<br>(0.073)                   |
| Log Rank        | -0.0056***<br>(0.001) | -0.0044***<br>(0.001) | -0.0034***<br>(0.001) | 0.0050<br>(0.005)                   | 0.0392***<br>(0.004)                 | -0.0162***<br>(0.005)               |
| Home            | 0.0051<br>(0.004)     | -0.0344***<br>(0.005) | -0.0093<br>(0.009)    | 0.2496***<br>(0.059)                | -0.0195<br>(0.045)                   | -0.4960***<br>(0.149)               |
| Common language | 0.0067***<br>(0.002)  | -0.0172***<br>(0.002) |                       | 0.1604***<br>(0.031)                | 0.0806***<br>(0.025)                 |                                     |
| Contiguity      |                       |                       | -0.0610***<br>(0.023) |                                     |                                      | -0.2683**<br>(0.108)                |
| Constant        | 0.1212***<br>(0.019)  | 2.1651***<br>(0.011)  | 2.9400***<br>(0.136)  | -0.9427***<br>(0.338)               | -1.4319***<br>(0.277)                | -2.4774***<br>(0.704)               |
| Observations    | 60,930                | 82,049                | 21,477                | 58,278                              | 82,104                               | 21,434                              |
| R-squared       | 0.662                 | 0.868                 | 0.765                 |                                     |                                      |                                     |

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0. All regressions include origin and destination fixed effects.

## 5. FILMS

In this section we repeat the analysis for the digital film data. Overall film availability in the EU iTunes stores is 38.4 per cent; substantially lower than for music. About 30 per cent of all films are available in 1 or 2 countries only; at the other end of the geographical distribution, around 10 per cent of all films are available in almost all countries. EU-wide availability (right-hand side of the curve) is considerably weaker for film than for music however, indicating that there is still a long way to go to make films as widely available as music.

The digital film availability score from the iTunes sample is considerable higher than availability in the only other sample study on this subject that we know of, carried out by the European Audio-Visual Observatory (2014, pp 208-225). That study covers a sample of only 50 films in 7 EU Member States and examines their availability across 6 online providers in each Member State. Average availability in that study reaches 19 per cent. However, availability of the 50 films in the iTunes stores in these 7 countries reaches 38 per cent on average, better than almost all national providers and very similar to our estimates.

Lower availability of films compared to music points to higher cross-border trade costs for films. This can be due to several factors. First, contrary to music, making films available across language borders requires translation. Translation costs are fixed costs that can vary between as little as a 1000 € for subtitling a short feature film to hundreds of thousands of Euros for dubbed films with professional actors. Second, vertical agreements between film producers and local distributors may contain a variety of clauses that restrict domestic digital availability, let alone cross-border availability. Film release requires investments in promotion campaigns by the local distributor. The distributor will only make this investment if he has a reasonable expectation of making a profit. He will not want competing distribution channels (DVD, online) to benefit from the spill-over effects of his costly cinema promotion campaign, unless he has a stake in these channels as well. He may also want to avoid spill-overs outside his domestic market, including through online

channels. Third, copyright clearance costs may play a role. Copyright clearance for film is more complex than for music because there are more domains involved in the clearance process: source material and screenplay, music, images and sound recording, set design, the film itself, broadcast, distribution and cable use rights. Unlike in the music industry, there are as yet no international institutional arrangements between film producers and distributors that facilitate copyright clearance at the pan-European level. On the other hand, in most EU countries there is a presumption of transfer of rights to the producer.

For films, absolute prices range from 2 to 22€, with 47 different price levels in between. The pricing regression shows that home markets and contiguous markets are priced lower and that climbing the sales charts drives up prices as well.

## 6. SUMMARY AND CONCLUSIONS

This study fills a gap in the empirical evidence on market fragmentation in digital music and film in the EU. It measures the current degree of market segmentation and tries to find some explanations for the observed patterns. Using data from the Apple iTunes country stores, the dominant provider of digital media downloads in the EU; we find that cross-border availability is in the 78-79 per cent range for music and around 40 per cent for film. There is still some way to go to achieve the 100 per cent mark that would be expected in a truly open EU Digital Single Market, especially in digital film. We also find evidence of price differentiation between iTunes country stores.

For music, cross-border copyright clearance costs still play a role in music availability patterns to the extent that remaining asymmetries in the geographical coverage of pan-European licensing systems and copyright management institutions explain part of the observed limitations in availability, together with the fact that national licensing still occurs for a small but significant part of the music market.

The market for digital films is different. The US is a more dominant supplier in the film market compared to the music market. Higher availability of US than EU-produced films indicates that market factors may be more important than copyright in explained the observed availability patterns. Moreover, territorial restrictions in distribution agreements



between film producers and national cinema operators – still the prime source of film revenue – may contribute to lower film availability - compared to music. At the same time, low digital sales make it uninteresting for film producers to by-pass these cinema distribution agreements. It is unclear how these agreements affect the welfare of European consumers and producers in a digital age. In the US, the film distribution model is gradually shifting to online distribution as the digital market is growing and becoming large enough to generate its own momentum. Geographical restrictions and the resulting fragmentation in the EU market may slow down the shift to a digital distribution model.

Future research could gain significant mileage from collecting data deeper into the long tail of the sales distribution and on the type of copyright licensing arrangement used for the distribution of digital music in the EU. Another important step would be to estimate the potential consumer and producer welfare effects from full availability, especially in digital film where availability remains relatively low. This requires a more complete modelling of consumer behaviour and supply with cross border production cost effects, for instance as in Aguiar and Waldfogel (2014a, 2014b).

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