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Geo-blocking of Non Audio-visual Digital Media Content in the EU Digital Single Market

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Geo-blocking of Non Audio-visual Digital Media Content in the EU Digital Single Market

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and Bertin Martens

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Abstract

This study measures the extent of cross-border geo-blocking and the impact on product availability and pricing for three non-audio-visual digital media products (music, e-books and games) in the EU Digital Single Market. We find that cross-border access to online media stores is generally blocked for the products and distributors surveyed in this study, though it can usually be circumvented. By contrast, cross-border availability is high, reaching around 98.6% for e-books on Amazon, 90% for downloadable music on iTunes, and 81.1% and 90.5% respectively for PS3 and PS4 PlayStation games. We could not directly verify cross-border availability of music in streaming services but a small sample test suggests that it could reach around 96% on Spotify. We find that the frequency of cross-country price differentiation is limited for games in the Sony PlayStation stores (less than 4%) but higher for downloadable music in the Apple iTunes stores (11.5%) and Amazon e-book stores (26%). Much of this price differentiation is driven by exchange rates and rounding off prices in country stores not denominated in Euro. In music, price discrimination is used mostly to extract higher prices from high-income consumers and for more popular songs with a lower price elasticity of demand. Subscription prices for main music streaming services are strongly correlated with country per capita income levels.

Geographical market differentiation and geo-blocking in digital media is often attributed to the territoriality of the copyright management regime. In most cases rights holders are in a position to issue multi-territorial licenses. For commercial reasons however they may prefer to exercise their rights on a territorial basis. The welfare effect of geo-blocking on sellers can be safely assumed to be positive otherwise sellers would not apply this commercial strategy. The impact on consumer welfare is a-priori ambiguous. Geo-blocking reduces the extent of product variety available to consumers. Whether it increases or reduces consumer welfare is an empirical question. The data required to empirically estimate the impact of (lifting) geo-blocking restrictions on welfare are held by the private platform operators. A future assessment can only be made if the required data on product prices and sales are made available to independent researchers.

Lifting geo-blocking restrictions will induce price arbitrage between country markets. That may put pressure on sellers to reduce price differentiation and push some prices up, others down. The price response of sellers is hard to predict and may have repercussions not only on downstream consumers but also on upstream parts of the supply chain. Price convergence is unlikely to be perfect and some differentiation may continue to exist because trade costs between country stores may not fall to zero (exchange rates, means of payment, linguistic trade barriers, etc.).

1. Introduction

When the Internet started its relentless rise to ubiquity, the Death of Distance hypothesis (Cairncross, 1996) suggested that geographical distance and borders would no longer matter in the online world. Anything available on the internet anywhere in the world would only be a click away. While this may be true for many online services, there are substantial parts of the online world where state borders remain an obstacle to access. Some of these obstacles are imposed by governments for political and legal reasons. Others are of a more commercial nature and imposed by firms. The term geo-blocking refers to this commercial practice that prevents online customers from one country to access and/or purchase a product or service from a website based in another country, or to automatically re-route customers away from a foreign website and to a local site in their own country. In the pre-digital era this was not an issue because high transport costs reduced opportunities for price arbitrage to an insignificant level. In the digital era active geo-blocking measures are required to prevent cross-border trade.

As part of its Digital Single Market Strategy, the European Commission (2015) proposed to eliminate discrimination between consumers based on their country of residence. This led to a legislative initiative (European Commission, 2016) to address unjustified geo-blocking and fight price discrimination based on nationality or place of residence or establishment of the consumer. This initiative covered the online sale of goods and services only, not digital media content that is subject to copyright protection. The Commission considered it necessary to further assess the potential impact of lifting geo-blocking restrictions with regard to copyright-protected products. This study contributes to that assessment.

It is often assumed that, since copyright is defined on a national territorial basis, the cross border sale of copyright-protected content would run into difficulties linked to the need to clear rights for several territories. A digital media distributor who makes copyright-protected content available online in more than one Member State has to clear the relevant rights for all territories where this content is made available. Right holders are free to issue single territory or multi-territorial license covering several territories. Multi-territorial licensing of rights is widely used for books, software and games, even before the digital era. That was not the case for music because of the key role that national collecting societies play in clearing rights and collecting revenue. Territorial fragmentation in music licensing was due not so much to copyright law but to the copyright management regime that revolved around national collecting societies. With digitization the importance of online music distribution via new global intermediaries such as iTunes, Spotify and many other music platforms increased. This put pressure on music publishers and collecting societies to reduce cross-border transaction costs. Following a European Commission (2005) recommendation, the music industry took initiatives to try to overcome these trade costs¹. While these collecting societies continue to play an important role, international licensing hubs have been set up to facilitate rights clearance on a multi-territorial basis (Dyson, 2013; Gomez & Martens, 2014). They contributed to increased cross-border availability of digital music in recent years. When technology and market pressure pushed rights holders to exercise their rights in a multi-territorial way they forced changes onto the management system.

¹ EU Directive 2014/26 on collective management of copyright and multi-territorial licensing encouraged the collecting societies to take another step in this direction.

The situation is different for audio-visual media. Film producers normally acquire all rights for all territories from the contributing artists (actors, script writers, musicians, etc.) (Renda et al, 2016; Simonelli, 2015). However, the commercial exercise of these rights is usually done by means of territorial licensing to film distribution channels by country. Territorial licensing enables them to practice geographical price and access differentiation and increase their revenue. In the case of film commercial choices made by film producers in the exercise of their rights create geographical fragmentation and obstacles to cross-border access, not the territoriality of copyright itself. The exercise of rights is a bilateral commercial contracting issue that cannot be addressed through copyright law. Contrary to music however, technological change and market forces do not seem to be strong enough (yet) in audio-visual media to induce change in the territorial exercise of rights.

While physical trade costs resulted in some degree of "natural" market separation in traditional offline markets, rights holders to digital media need to resort to geo-blocking technology in online markets to achieve this market segmentation. That stands at odds with consumer expectations in a seamlessly connected online world and with the declared DSM policy objective to fight consumer discrimination based on place of residence.

The European Parliament has become aware of this situation. Proposals in the Parliament triggered a discussion about the possible extension of the non-discrimination obligation laid down in the European Commission's (2016) geo-blocking proposal to copyright-protected non-audio-visual media services such as music, e-books and online games². The proposed Regulation as such (in particular Articles 3 and 5) applies to these media services. Only Article 4 that forbids different conditions of access on the basis of place of residence does not. Audio-visual media such as films and TV programmes could be subject to the same reasoning. However, questions related to cross-border access to such works are being discussed under the DSM copyright policy package, not under the geo-blocking initiative. They are therefore not considered in this report.

The objectives of this report are (a) to empirically verify the extent of remaining restrictions to cross-border access and availability in non-audio-visual media products, (b) verify the extent of cross-country price differentiation in these products and (c) give some indications on the potential economic impact of lifting geo-blocking restrictions.

We cover geo-blocking in three non-audio-visual (NAV) sectors: music, e-books and games. We were unable to collect data for all online operators in these vast markets. Our verification of geographic market conditions is therefore limited to the market leaders in the EU, respectively Amazon (e-books), Sony PlayStation (games), and Apple iTunes (music). We collect data at the product level for music, books and games

² See <https://www.theparliamentmagazine.eu/articles/news/eu-parliament-approves-new-geo-blocking-rules>. The proposed EP amendment of the Commission regulation includes the following text: "This Regulation should be regularly evaluated, with a view to proposing amendments where necessary. The first evaluation should concentrate, in particular, on the possible extension of the scope of this Regulation to other sectors such as audio-visual, financial or electronic communication services, transport services or healthcare services. In particular, the evaluation of the extension to audio-visual services should be based on detailed price and cost data which only service providers possess. Therefore, those providers should cooperate in the evaluation in order to assess whether the inclusion of those services within the scope of this Regulation would lead to the evolution of business models which are more efficient than those currently used." This text has not been agreed yet between Commission, Parliament and Council.

download services. For music streaming we compare subscriptions across countries and service providers for a number of leading music streaming services³.

2. Summary of findings

2.1. Cross-border access and availability⁴

We find that cross-border access to online media stores (covered by this research) outside the country of residence of the consumer is generally blocked for the media products and distributors surveyed in this study. Geo-blocking remains a pervasive feature of online shopping for non-audio-visual media. However, geo-blocking is not absolute and can usually be circumvented by changing the residential address (and sometimes the credit card) of the user and/or opening several accounts in several country stores. These possibilities are open to more internet-savvy consumers who are willing to invest effort in getting cross-border access. It indicates however that online distributors are not overly worried about a limited extent of cross-border access.

By contrast, cross-border availability of non-audio-visual media products is high. Product catalogues are largely overlapping between country stores in the EU. The overlap reaches around 98.6% for e-books on Amazon, 90% for downloadable music on iTunes, and 81.1% and 90.5% respectively for PS3 and PS4 PlayStation games⁵. We could not directly verify cross-border availability of music in streaming services. However, a small sample comparison of unavailable songs between Spotify streaming and iTunes downloads suggests that cross-border availability on Spotify is higher than on iTunes and could reach around 96%. High cross-border availability suggests that consumers would not gain much in terms of product variety when cross-border access restrictions (geo-blocking) would be lifted.

2.2. Price differentiation⁶

We find that online music distributors, both for streaming and download (iTunes) services, make use of geographical price differentiation. In the case of music downloads from iTunes, 11.5% of all observed song prices differ from the mode price (the most frequently quoted price), of which 9% were higher and 2.5% were lower than the mode

³ Streaming services exist in e-books as well but represent only a marginal share of the e-books market.

⁴ Cross-border access is defined as a user in one country having access to content offered in another country. In this case the user (virtually) crosses the border from his country of residence to the country where the content is offered. Cross-border availability is defined as content that is made available (not necessarily produced) in one country is also available in other countries. Here the content (virtually) crosses the border from one country to another. These definitions correspond to WTO GATS services trade modes 1 and 2. See https://www.wto.org/english/tratop_e/serv_e/cbt_course_e/c1s3p1_e.htm

⁵ These high cross-border availability figures for non-audio-visual media contrast with much lower cross-border availability for audio-visual media. See for example Alaveras et al (2015), Batikas et al (2015), Gomez and Martens (2015).

⁶ We examine geographical price discrimination between consumers in two countries. In economics jargon this is called third-degree price discrimination.

price. Price discrimination is driven by country and product characteristics⁷. Consumers in high-income countries are more often subject to higher prices. Lower prices are more evenly spread across countries in most cases. Higher prices occur more frequently when songs are popular in a country. In iTunes, price differentiation is used as a commercial strategy to extract more value from consumers with higher incomes and lower price elasticity of demand.

Music streaming services can only differentiate subscription prices by country, not by song. For the main players, Apple Music and Spotify, subscription prices are positively correlated with income levels in countries – and with each other. Typically, prices in Southern and Eastern EU MS are lower than in North-Western Europe. However, Google, Microsoft and Tidal music do not differentiate prices across the EU. Some other minor music service providers with special business models are free of charge in all countries.

For e-books, price differentiation from the mode price is observed in 26% of all observed book prices in the 6 Amazon e-books stores in the EU - or 16.5% if only the 5 Euro-denominated stores are taken into account. Clearly, exchange rates and rounding off prices plays an important role in non-Euro countries. Price differentiation is more or less equally divided between increases and decreases. There is no significant correlation between e-book prices and country income levels or sales rankings⁸.

Compared to music and e-books, price differentiation is less prevalent in Sony PlayStation online games stores. Price increases occur in less than 0.5% of all observations. The frequency of price decreases reaches 2.2% for PS3 games and 3.2% for PS4 games⁹. Much of this price differentiation seems to be driven by exchange rates and rounding off prices in country stores where prices are not denominated in Euro.

We conclude that the frequency of geographical price differentiation is rather limited in non-audio-visual media download stores. It is widely practiced however in music streaming services. Note that this conclusion does not necessarily apply to smaller online operators in these markets.

2.3. The potential economic impact of lifting geo-blocking restrictions

The economic impact of geo-blocking on the welfare of media producers (sellers) and consumers (buyers) can be split in two components. First, consumer welfare may be negatively affected because geo-blocking reduces product choices as available catalogues will not reflect the complete range of product variety available across the entire EU (the variety effect). According to a Eurobarometer Survey, the variety effect is reported to be the strongest driver for consumers to try cross-border access to

⁷ Price deviations are slightly less frequent among Euro-denominated stores, probably due to exchange rates. We allow for a 10% margin between euro and non-euro prices in order to account for exchange rate variations and rounding-off of prices.

⁸ Amazon product pricing is algorithm-driven. Prices may change frequently, depending on market conditions and price competition in the country covered by a store.

⁹ Finland is an exceptional case: 99% of all games are priced marginally lower than the mode price, often not more than 10 or 20 cents. We decided to discard these marginal changes.

catalogues in other countries¹⁰. Other studies confirm this (Cardona, 2016). More educated consumers in smaller countries with smaller domestic markets and less product variety at home are more inclined to look for media content abroad. Still, few consumers try cross-border access and more than half of those who tried failed.

Second, geo-blocking enables geographical price discrimination between consumers on the basis of their place of residence (the price effect). Sellers can set different prices for the same product in different country markets with a view to maximize their revenue and monetize part of the (unpaid) consumer surplus. As the evidence presented in this report shows, price differentiation is usually driven by the popularity of products (the price elasticity of consumer demand) and by purchasing power (the income elasticity of demand).

The welfare effect of geo-blocking and price differentiation on sellers can be safely assumed to be positive otherwise sellers would not apply this commercial strategy. The impact on consumer welfare is a-priori ambiguous and requires an empirical assessment. Some consumers may gain, for instance in low-income countries and buyers of products for which there is relatively weak demand. Others will lose, for instance in high-income countries and consumers of popular products with strong demand and thus relatively low price elasticity. Whether it is welfare enhancing for society as a whole is also an empirical question that depends on the combination of seller and consumer effects. An empirical assessment can only be made if sellers make the required data on pricing and sales available to researchers.

What will happen when geo-blocking restrictions are lifted?

Since price differentiation occurs only in a minority of cases in music, e-books and games, one might assume that prices are more likely to align with the mode price. That is not necessarily the case however. Lifting restrictions on cross-border trade will induce price arbitrage between country markets. That may put pressure on sellers to reduce price differentiation. Some differentiation may continue to exist however because arbitration and trade costs will not fall to zero. Exchange rate variations, transactions costs related to credit cards and registration in stores, trade barriers related to language etc. may still create obstacles for consumers trying to move between country stores (Cardona, 2016). For example, we report here that barriers to cross-border access to country stores in Amazon e-books and Sony PlayStation are rather permeable but still generate transaction costs that seem to be sufficient to maintain some degree of price differentiation. Sellers may also experience additional costs from selling cross-border. For instance, they will have to apply different VAT rates according to the country of residence of the buyer¹¹.

A major issue related to the possible lifting of geo-blocking restrictions is the impact on prices. Consumers in lower-income (and thus lower-priced) countries fear an increase in prices. On the other hand, consumers in higher-income countries might experience a decline in prices. It is hard to predict the sellers' price response to lifting geo-blocking

¹⁰ See Eurobarometer survey nr 411, Section 5. Available at: <http://ec.europa.eu/COMMFrontOffice/publicopinion/index.cfm/Survey/getSurveyDetail/instruments/FLASH/surveyKy/2059>

¹¹ For a detailed assessment of additional VAT management costs for sellers, see the European Commission's impact assessment for the lifting of geo-blocking restrictions in goods and services trade, available at <https://ec.europa.eu/digital-single-market/en/news/impact-assessment-accompanying-proposed-regulation-geo-blocking>

restrictions. It is unlikely that all prices in all countries will automatically be adjusted to the highest price level. Service providers may try to increase cross-border trade costs in order to reduce price arbitrage and maintain some level of price differentiation between countries in the absence of geo-blocking restrictions. For example they can play on language and cultural differences between countries and construct menus and apps without multiple language options and with specific cultural features that link a language to a subscription price. Price differentiation may also shift from geographic price discrimination to product "versioning", with higher-priced versions of the streaming service being offered with additional features. We already observe this for instance in music downloads (Gomez & Martens, 2014).

A related question is the impact of price changes after lifting geo-blocking restrictions and possible new price differentiation mechanism that may emerge on consumers and sellers' welfare. In the absence of detailed product level data on consumer demand for music by country, it is not possible to estimate these economic welfare effects¹².

Empirical evidence from online goods markets shows that lifting geo-blocking restrictions boosts welfare for producers, consumers and society as a whole (Duch-Brown and Martens, 2016). That empirical evidence underpinned the original Commission geo-blocking initiative. Aguiar & Waldfogel (2014) show that, in the case of online music, product variety restrictions have a negative impact, both for consumers and producers. Lifting geo-blocking restrictions in online music to make the entire catalogue available to all consumers in all EU Member States would increase revenue for music producers and welfare for music consumers¹³. That study is limited to the variety effect and does not cover geographical price differentiation in music.

Moreover, the supply side pricing response is not necessarily limited to consumer prices. It may have repercussions on intermediate prices, such as license fees for copyright holders. For example, Spotify reports¹⁴ that its licensing system includes different license fees for the same song in different countries, depending on the pricing and market conditions for that song. On the other hand, the predominance of mode pricing in the iTunes music stores suggests that, even if geographical differentiation in license fees happens, it would only occur in a small minority of cases.

Music streaming subscriptions are a special case because there is only one subscription price per country. Convergence to the mode price may not be a very realistic assumption and some degree of price convergence may occur. It is hard to predict how the combination of supply and demand side factors will play out. The small number of available observations and the absence of consumption and consumer profile data make it impossible to do estimations.

Online markets for digital media services are testing the limits of the EU Single Market policy. Trade costs in offline physical markets ensure to some extent a "natural"

¹² Marcus and Petropoulos (2017) apply a methodology that starts from an estimation of knowledge of other European languages among migrants and native populations, and their willingness to pay for content in these languages. That method takes language versions of media products as exogenously given and not as endogenous to availability and access. When the market expands, media producers may have an incentive to provide more language versions. Conversely, language versioning can be used as an active tool to geographically segment markets.

¹³ Aguiar & Waldfogel (2016) showed that the same is true for films.

¹⁴ Spotify Position Paper on the EP/IMCO Draft Report with amendments to the Geo-Blocking Regulation.

geographical separation of markets. Trade costs in online markets are much lower in the absence of legal and commercial (geo-blocking) restrictions. That could lead to stronger price convergence across Member States and possibly a combination of positive and negative welfare effects between different socio-economic groups.

This leaves policy makers with a policy dilemma between lifting geo-blocking restrictions on the basis of empirical economic evidence and welfare considerations, or on the basis of the DSM policy principle to oppose price discrimination based on the country of residence of the consumer. The data required to compile the evidence is hard to access (held by private operators).

3. Music downloads

After years of decline, worldwide music revenue is increasing again (IFPI, 2016). That increase is mainly led by digital music sales (as opposed to physical sales) that represent almost half of all revenue. Within digital, music streaming services are growing fast and represent almost half of all digital revenue. The market for digital music downloads-to-own is declining under pressure from streaming but still represented about half of all digital music revenue and about a quarter of all music sales revenue in 2016. Streaming is discussed in detail in the next section.

For this report we selected the Apple iTunes stores to verify cross-border access, availability and pricing conditions for downloadable music in the EU. Apple maintains country-specific iTunes stores in all EU Member States except Croatia. Within the market for music downloads, Apple's share was estimated at over 60%, far ahead of the second largest provider, Amazon, with a market share of 16%¹⁵.

Cross-border access is blocked in the Apple iTunes stores. The Terms and Conditions state that "No intra-community purchases can be made on the Apple Store"¹⁶. Buyers have access to the country store in their declared country of residence, even when they are staying in another country. In practice however, buyers can change their residential address to another country, use a credit card from that country, and thereby get access to other stores. IP addresses do not matter in iTunes for the determination of the country of residence.

Samples of songs and albums were constructed by obtaining the Top-100 albums and songs from: <https://rss.itunes.apple.com/>, in the US¹⁷ store and country-specific iTunes stores in 27 EU Member States for 40 categories (genres) of music (see Table 1 in Annex 1). This data collection method limits the sample to top-ranked items. It is not necessarily representative for the long tail of the sales distribution.

Subsequently, information was obtained for each distinct item by making queries to the iTunes API: [https://itunes.apple.com/lookup?id=\[itemID\]&country=\[storeID\]](https://itunes.apple.com/lookup?id=[itemID]&country=[storeID]) where itemID is the ID of the song or album and where storeID is the country code ID. An item is considered not to be available in a store when no information is available for that item in the store¹⁸.

Prices include the applicable VAT rate in each country. Note that in the UK, Denmark and Sweden the price is quoted in local currency, not in Euros. Local prices are converted using exchange rates from Yahoo Finance. These are: EUR/GBP = 1.1636; EUR/DKK= 0.1344; EUR/SEK= 0.1051. For more details about iTunes pricing policies, see Gomez and Martens (2015).

¹⁵ Source: Statista (2012) <https://www.statista.com/statistics/248995/us-paid-music-download-market-distribution/>

¹⁶ <http://www.apple.com/uk/shop/help/payments>

¹⁷ In the remainder of this analysis we do not use information on items available in the US store only. US information was collected only to increase sample size, not for country comparison purposes.

¹⁸ In some cases the price field had the value -1. For albums this means that although some or all of the songs are available for purchase the whole album is not. For songs it means that a song is only available through purchase via the whole album. In all these cases it was assumed that the item is not available.

In total data on 32,245 music albums were obtained using the rules outlined above. Songs are harder to identify than albums. Songs may exist in multiple albums and a consumer can obtain the same song from different sources at different prices. The issue arises because the same song has different identifiers for different albums. We apply a procedure that checks for minimal differences in song names and duration (less than 3 seconds). In addition, different edits of a song are assumed to be different songs. If multiple versions of the same song were found in the same country then the cheapest was used. In total we found 36805 distinct songs using this procedure.

Table 2 (in Annex 1) calculates average cross-border availability in the EU27 for songs (90.8%) and albums (88.0%). Nearly 79% of all songs are available in all countries; only 6.3% is available in 3 countries or less. For albums, nearly 78% is available in all countries and 9.5% in only 3 countries or less. The last panel of Table 2 shows that there is some variation in availability by country. Overall, cross-border availability of albums in iTunes seems to have increased significantly over the last years. Compared to an earlier study on availability in the iTunes music stores (Gomez & Martens, 2015), availability seems to have increase. The earlier study found cross-border music availability in the Apple iTunes stores in the EU27 between 73 and 82% for songs and albums, depending on whether different versions are considered as different products or not.

Table 6 (in Annex 2) shows the extent of price dispersion or price deviations from the mode price (the most frequently quoted price) for songs and albums across the EU27 iTunes stores. The overall index of price differentiation across countries varies between 11.5% for songs and 16.2% for albums. This means that only 11.5% of all song-country observations have prices that diverge from the mode price for a song. Nearly 80% of the observed price deviations are positive deviations from the mode price, i.e. higher prices than the most frequently quoted price for that song (67% for albums). When the sample of price observations is restricted to country stores denominated in Euros, these figures decrease slightly to 10.7% and 14.6% respectively¹⁹. This suggests that exchange rate variations and price rounding may be responsible for part of the observed overall price variation²⁰.

Table 7 reveals geographical patterns in price dispersion for songs in the iTunes stores. Price dispersion occurs more frequently in high-income countries in North-Western Europe than in lower-income countries in Central, Eastern and Mediterranean Europe (column 7) and these are mostly price increases compared to the mode price (column 9). Moreover, price dispersion occurs more frequently for popular songs that have a rank in the Top-100 (comparing columns 7 and 8). Price reductions (negative deviations from the mode price) are far less frequent and more evenly spread out across countries (column 10), with a somewhat strange peak in the Czech Republic, Hungary and Greece. The peak in the UK is largely driven by exchange rates and rounding-off prices in Pounds.

Table 8 shows similar patterns for albums. Price dispersion occurs more frequently in higher-income countries (column 7). They are mostly price increases (column 9) for

¹⁹ Recall that for country stores not denominated in Euro we allowed for a 10% exchange rate margin before classifying a price as different.

²⁰ Amazon pricing is algorithm-driven and prices vary frequently in function of local market conditions. Amazon may also run price experiments on its website and the probability of ending up in such an experiment is not negligible.

popular albums that make it into the Top-100 (comparing columns 7 and 8). However, the frequency of price dispersion for albums is tailing out slower than for songs when moving to lower-income countries. This may be related to the fact that album prices are anyway spread out over a much wider range than song prices. The main difference with songs is a less clear-cut geographical pattern of negative deviations (price reductions) from the mode price (column 10). Negative deviations still tail out for the poorer countries but also show low frequency in the top and middle-income countries²¹.

The overall conclusion is that price discrimination for songs and albums is used mostly to extract higher prices from high-income consumers and for more popular songs with a lower price elasticity of demand. The frequency of price decreases is much lower than the frequency of price increases.

The economic welfare effects of lifting geo-blocking restrictions in digital music have been estimated by Aguiar and Waldfogel (2014). They find that, on average across European countries, consumers would gain 1.8% in welfare and producers about 1.1%. The magnitude of these effects varies by country, with slight producer welfare losses in the UK, Ireland and Belgium only. The impact is relatively small because cross-border availability in music is already high and opening cross-border access will only lead to a minor increase in available variety of products (catalogues). Note that this study covers the variety effect only (increases in the number of products in catalogues), not the price effect. Estimating the welfare implications of opening national markets to price arbitrage would require detailed data on prices and consumer demand per song and country. The supply side response would also have to be included but is very difficult to predict.

Marcus and Petropoulos (2017) concur with this study and provide a very similar estimate based on their method of estimating language-related demand and willingness to pay. The language-based method may be applicable to music because it is usually not made available in translated versions. Films and books by contrast are often made available in translation.

²¹ We also calculated the extent of price deviations from the mode price for songs and album prices without VAT. As expected, this triggers a vast increase in price deviations from the mode price, mainly due to variations in VAT rates for music across EU MS (See Table 4 in Annex 2). This shows that iTunes pricing focuses on consumer prices. Consumer prices are rounded off to fit into price brackets. iTunes deducts the relevant VAT rate, depending on the country of residence of the buyer. As such, the seller pays for (or benefits from) variations in VAT rates, not the consumer.

4. Music streaming

Music streaming is the fastest-growing distribution channel for music that accounts now for more than a quarter of total music sales revenue, up from nearly zero a few years ago. We have identified more than 20 music streaming services that are currently available in the EU (see Table 9 in Annex 2). Spotify was an early innovator in 2008 and is now one of the most well-known services. More recently, some big players like Amazon, Apple, Microsoft and Google came into this market. There is also a variety of specific niche market service providers such as Bandcamp (a streaming service with direct payments to the artists), Soundcloud (where users can upload their own music), Earbits (where artists can bid to promote their music) and Saavn (only Hindi music).

Geo-blocking is widely practiced. The big players do not allow cross-border access to their services. Some smaller service providers do however. At the same time, geographic coverage of streaming services varies widely. Some big players are only available in a few countries, such as Amazon Music Unlimited and Echo Plan, while others are available in all EU Member States (Spotify, Deezer and Apple Music). Table 9 shows that the number of (paid) streaming services available ranges from 7 to 14 per country.

We have no means to verify cross-border availability of music in streaming services because there is no way to check music streaming catalogues in a country. Still, there is evidence that cross-border availability on Spotify is not 100%²². We carried out a small sample check to verify this. We took a random sample of 147 songs out of a larger sample of 3500 songs that are available in iTunes stores in other EU countries but not available in Spanish iTunes store. We then checked manually the availability of these songs in Spotify in Spain. We found that 48% of these songs are available on Spotify Spain, plus another 8% that are available in different versions. The remainder was not available in Spotify Spain either. Assuming that this small sample is reasonably representative²³, we estimate that cross-border availability of songs in Spotify should be around 96%, compared to around 91% in iTunes.

Pricing varies significantly across countries, much less so across services. Streaming services are usually available either for free (with ads) or on a monthly subscription basis (without ads). They also exist in "family" versions that allow the use of several devices on a single subscription or subscription cost sharing. As with songs and albums in Apple iTunes, streaming subscription prices are higher in Western Europe compared to lower-income countries in Central, Eastern and Southern Europe (see Table 9). There is a strong positive correlation between GDP per capita and subscription prices (correlation coefficient between +0.62 and +0.66). Similarly, cross-country price variations are almost perfectly correlated between streaming providers (correlation coefficient +0.99). This indicates that providers observe each other closely in setting prices. Geographical third-degree price discrimination appears to be the leading commercial strategy of the main streaming service providers. However, not all streaming service providers apply geographical price discrimination. For example, Google, Microsoft and Tidal music do not differentiate prices across the EU. This shows that other business models are feasible. Some music streaming service providers with special business models are (partially) free

²² See <https://community.spotify.com/t5/Content-Questions/Check-if-a-song-is-available-in-your-country/td-p/1022698>

²³ And assuming that all songs available in iTunes are also available in Spotify.

of charge in all countries or introduce very specific payment conditions not linked to subscriptions.

A major issue related to the possible lifting of geo-blocking restrictions on music streaming services is the impact on subscription prices for providers that practice price discrimination. Consumers in lower-income (and thus lower-priced) countries fear an increase in prices. On the other hand, consumers in higher-income countries might experience a decline in prices. It is hard to predict the sellers' price response to lifting geo-blocking restrictions. It is unlikely that all subscription prices in all countries will automatically be adjusted to the highest price level, though some music streaming service providers argue that since the bulk of their subscribers are located in high-income countries that will determine the new price level. Of course, service providers may try to increase cross-border trade costs in order to reduce price arbitrage and maintain some level of price differentiation between countries. For example they can play on language and cultural differences between countries and construct menus and apps without multiple language options and link the language to a subscription price. Price differentiation may also shift from geographic price discrimination to product "versioning", with higher-priced versions of the streaming service being offered with additional features.

5. E-books

The market for e-books is segmented across digital readers and file formats. The Mobi format can be used on Amazon Kindle readers and Kindle apps available in Apple iOS and the Android stores. The ePub and PDF formats are fully interoperable on several devices, including Sony, Nook (Barnes & Nobles), Kobo, Tolino, Tagus and the iBooks app in Apple devices. Amazon Kindle has an estimated market share of 74% in the US, followed by Apple iBooks (11%) and Nook (8%)²⁴. The Amazon Kindle share is around 90% in the UK²⁵, and around 40% in Germany and Spain (Wischenbart, 2014; Li, 2014). There are no statistics for other European countries. Amazon sells e-books from other publishers but also offers Kindle Direct Publishing to individual authors to directly publish their e-books. In this report we focus on the market leader, the Amazon Kindle stores.

5.1. Cross-border access

Book publishers on Kindle can hold publishing rights for all territories (worldwide) or for specific territories only. The latter may occur when a publisher holds rights for specific language and/or country versions only, or acts as an associate publisher for the main publisher or the original language version of a book. Publisher can specify for which territories they hold rights when they upload an e-book on Amazon²⁶.

Amazon has 12 Kindle stores worldwide, of which 6 in the EU: Germany, UK, Spain, France, Italy and the Netherlands. Anyone anywhere has access to the Amazon US store²⁷. However, access to Kindle country stores is in principle restricted (see Table 10 in Annex 2)²⁸ to residents in these countries. Residents in Belgium, Luxembourg, Ireland and Austria can buy in neighbouring country stores that share the same language. Amazon uses the physical mailing address of the Amazon account holder to determine the users' country of residence. Users can look at the catalogue of any Amazon country store but purchases can only be made when the user logs in to the Amazon store where he has a registered account, including a residential address. Attempts to buy in other stores trigger a message that redirects the user to the store corresponding to his postal address (see Annex for examples). Users can switch to another Amazon store by providing a different postal address in another country. There is no need for a credit card or IP address associated with that country. This makes the geographical walls around the Kindle stores quite porous. As a result, Amazon Kindle stores are de facto cross-border accessible, though it requires some effort by computer-savvy users.

Table 19 in Annex 2 presents some data on cross-border access in other e-book stores in five of the six EU countries where Amazon operates (Germany, France, UK, Spain and the Netherlands). The majority do sell cross-border, except in the UK where the situation is more variable.

²⁴ <http://authorearnings.com/report/october-2015-apple-bn-kobo-and-google-a-look-at-the-rest-of-the-ebook-market/>

²⁵ According to the European and International Booksellers Federation.

²⁶ <https://kdp.amazon.com/help?topicId=A1H1OSSLAY4B4F>

²⁷ No US residential address or credit card is required to access e-books on Amazon.com.

²⁸ <https://www.amazon.com/gp/help/customer/display.html?nodeId=201270050>

5.2. Cross-border availability

Alaveras et al (2015) examine geographical market segmentation in the market for e-books in the EU using data from the Amazon Kindle e-books store. They collected availability and price data for a sample of Top-100²⁹ e-book titles in each of the six EU Amazon stores (UK, Germany, France, Spain, Italy and the Netherlands) and in the US store in June 2015.

We follow a similar method to obtain the Top-100 e-book titles in each of the 6 European Amazon stores in January 2017. This yields a list of 598 unique titles of e-books. We consider translations as different products³⁰. Since the 6 stores cover 6 different language zones, there is hardly any overlap between these Top-100s. Only two titles were common to these Top-600 lists. We take this list of books and check their availability in each of the 6 stores. We also collect prices for these books in each store. Note that this data collection method limits the sample to top-ranked items. It is not necessarily representative for the long tail of the sales distribution.

Table 11 (in Annex 2) shows that overall cross-border availability in Amazon e-book stores is 98.6%. More than 97% of all book titles are available in all stores. This represents a small increase compared to Alaveras et al (2015) who found overall availability around 93%. These high availability figures show that there is no real need to switch stores in order to have access to the variety of e-book titles in Amazon. Moreover, all users anywhere in the EU have access to the US store where 586 of these 598 titles are also available. We can therefore conclude that all users in the EU have access to nearly all titles.

5.3. Price dispersion across Amazon Kindle stores

All Amazon e-book prices include VAT. Since January 1, 2015, the VAT rate of the buyer's country of residence is applied. Table 12 shows how VAT rates for e-books vary across the EU. According to Amazon, prices excluding VAT are adjusted so that the price including VAT is aligned across all stores. However, we observe some price differentiation between stores. This implies that the alignment is not carried out uniformly across all stores. Prices in country stores may vary according to local market conditions and competition from other online bookstores in these countries. Amazon may also run price experiments in particular stores. Amazon sets the exchange rate for payments in currencies other than the currency in which the price is quoted on screen³¹.

Table 18 shows the frequency of prices variations for identical e-books across the 6 Amazon country stores in the EU. Only about a third of nearly 600 titles were found to have identical prices across all the stores where they are available. Another third had a different price in one country store. Out of 3588 country-price observations for the nearly 600 titles in all stores, 23.2% deviated from the mode price. About two thirds of these price deviations were higher prices compared to the most frequently cited price; only one third were lower prices.

²⁹ Ranks in Amazon are updated hourly and reflect newer and historical sales of every book sold, with recent sales weighted more heavily. To create the Best Sellers list, Amazon takes into account the entire sales history of a book.

³⁰ Few users will be fluent in several languages, let alone 6 languages. Hence, from a user perspective, substitution between different language versions is very limited. Limited substitution justifies considering translated versions as different products.

³¹ <https://kdp.amazon.com/help?topicId=A30464Q6OVH578>

Marcus and Petropoulos (2017) point out that e-book pricing variations should take into account differences in book retail pricing policies in Member States. France, Germany, Spain and Slovenia have mandatory retail prices for books, including e-books. Annex 2 presents a short overview of the impact of fixed retail book pricing on e-book markets.

5.4. Welfare effects

The welfare effects of lifting geo-blocking restrictions are very hard to predict in the absence of detailed data on consumer demand by book title and price levels in each country. E-books cross-border availability is already very high in the Amazon stores, especially when the Amazon.com US store is taken into account as a back-door access. Lifting geo-blocking restrictions will only produce a very small increase in the variety of titles available. Moreover, most popular books will be available in translation, especially in larger markets. That would again dampen the variety effect as consumers can choose between different language versions of the same book. The main impact will therefore come from the price effect.

6. Games

Since the 1980's when the first video game consoles entered households, video games have become a common option for home entertainment. Over the last decade the target audience for video games shifted towards adults. Most games have violent and strong language or complex storylines. The cost of producing a video game is comparable to the cost of an average movie. Grand Theft Auto IV for instance is estimated to cost around a quarter billion dollars, according to IMDb, and made one billion dollars within one week of its release. Storage methods have changed from magnetic tapes for the first Ataris, to cartridges for Nintendo and Sega, and to Optical Discs (CDs, DVDs and Blu-rays). Today one can download or stream a game from a Sony PlayStation store or a Microsoft Xbox Live store. However, Microsoft's original plan to distribute games only on-line for its flagship console (Xbox-ONE) led to a public outcry (Lee, 2012).

Sony PlayStation is the market leader in game consoles, followed at some distance by Microsoft Xbox and Nintendo. Sony sold nearly 14 mln consoles in 2016, compared to 6.1 mln units for Xbox and 6.3 mln for Nintendo³². We concentrate our analysis of cross-border access, availability and price dispersion on downloadable games for Sony PlayStation PS3 and PS4, the two most successful video game consoles produced by Sony.

Data were obtained from the PlayStation store (<https://store.playstation.com>) in 25 EU Member State. There are no stores in Lithuania, Latvia and Estonia³³. For each of those countries the complete catalogue of video games was retrieved, including their ID and prices. Prices include possible discounts from the normal price. Translated games have a different ID and hence are considered to be a different game. Games that are not downloadable and only available on optical disc are excluded. In total 3,518 distinct games were found in the 25 EU stores, 2,052 PS3 games and 1,466 PS4 games. There is some overlap between PS3 and PS4 games.

There are five main categories of games in the PlayStation Network. A Game is the basic game; a Full Game is a game plus add-ons (such as extra stages or characters). A Bundle can be a collection of games or a full game with additional features such as special characters, costumes and other add-ons that can otherwise be purchased. For instance NBA-2K17, the most popular basket-ball game, comes into the standard edition and the Kobe Bryant Gold Edition that costs approximately double the price, offering virtual currency and digital content in the form of particular player's outfits for instance. The fourth category is PS-Now Games that can be purchased at a price and can only be accessed online. Finally there are the PlayStation mini games and classic games from older consoles.

Sony uses geo-blocking to block access to PlayStation stores in other countries. In principle, users have access only to the store in the country where they are registered and have a credit card or other means of payment. Cross-border access is not impossible however. Users can open a new account in any country. It requires an address and a valid credit card for that country.

Cross-border availability reaches 81% for the older generation of PS3 games and 90% for the newer PS4 games (see Table 17 in Annex 2). 54% of all PS3 games and 80% of

³² <https://www.statista.com/statistics/276768/global-unit-sales-of-video-game-consoles/>

³³ https://en.wikipedia.org/wiki/PlayStation_Store#Availability

all PS4 games are available in all 25 stores. The average PS3 game is available in 20.3 country stores, the average PS4 games in 22.6 country stores. Availability does not vary much across countries. This puts cross-border digital game availability below e-books and music streaming, and more or less on par with downloadable music.

There is some price differentiation for identical games across country stores though the frequency and magnitude of price differentiation is low compared to other non-audio-visual media.

For PS3 games and within the group of Euro-denominated stores, less than 0.1% of all games are priced higher than the mode price. For stores in other currencies positive deviations from the mode price are somewhat more frequent but still modest at 0.4% (taking into account a 10% exchange rate margin). In the case of Hungary this reaches an exceptionally high 8%. Negative price deviations occur more frequently, affecting to 2.2% of all prices³⁴. A similar pattern occurs for the more expensive PS4 games. The frequency of positive price deviations is limited to about 0.36%. The frequency of negative price deviations is higher at 3.2% but jumps to 7.3% when the peculiar case of FI is included³⁵. Exchange rates and rounding-off prices in other currencies are the main drivers for these price differences. They occur more frequently in non-euro stores in HU, MT, RO, HR and UK. Within the group of euro-denominated stores the frequency of price differentiation is very limited.

We conclude that there is not much evidence of deliberate geographical price discrimination in the PlayStation stores in the EU. Exchange rates and rounding off prices in other currencies account for a large part of price differences. Price differentiation is stronger between products, especially successful premium games, than between countries. Lifting geo-blocking restrictions would have a very marginal impact only on consumer and producer welfare through the price effect channel. The variety channel may generate somewhat stronger welfare effects as there is some room for improvement in cross-border availability.

³⁴ Or 6.6% of all prices when the peculiar case of Finland (with marginal negative price deviations) would be included. 99% of all games in FI are priced slightly lower than the mode price in the EU. The difference is mostly just 10 or 20 cents. We ignore these small differences.

³⁵ In Finland we observed frequent very small deviations (only a few Euro cents) from the mode price.

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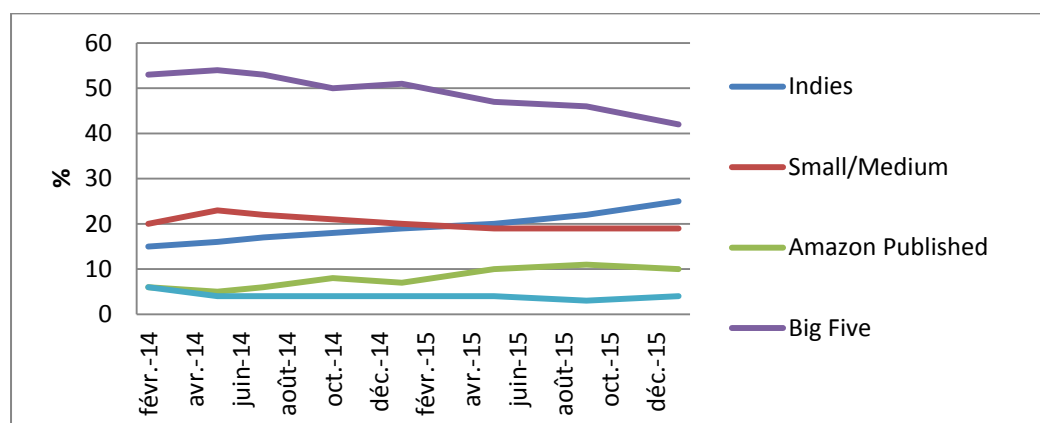
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Annex 1: Pricing policies for e-books

Revenues from Amazon Kindle come from three different sources: 1) sale of the Kindle devices, 2) ads displayed on Kindle, 3) sale of eBooks. The latter counts for the largest revenue share. The sale of Kindle devices does not yield significant margins since price is (at best) breakeven and compensated by sales of contents.

There are three e-book business models in Amazon. First, Amazon can act as an intermediary, selling books from other publishers. Second, Kindle Direct Publishing allows individual authors to directly publish their e-books. Finally, Amazon has its own publishing unit, Amazon Publishing, composed of a number of labels including AmazonEncore, AmazonCrossing, Montlake Romance, Thomas & Mercer, and 47North³⁶. E-books from these are published through Kindle Direct Publishing in Figure 1 below shows the distribution and evolution of market shares by publisher type in the UK. The market share of the Big Five³⁷ is declining over time. Ownership of electronic publishing rights³⁸ and pricing strategies of all these types of publishers vary in different stores and affect availability.

Figure 1: Evolution of Market share of e-book Sales by Publisher Category



Source: Rüdiger Wischenbart *Global E-book Report 2016*

Several factors affect the pricing and availability of e-book titles in Amazon stores:

1) Kindle Direct Publishing (KDP): the author directly publishes his book at the Kindle store without any intermediary publisher. He can select the 35% or the 70% royalty option³⁹. If the first is selected, the royalty received by the author is 35% of the list price without VAT for each unit sold.⁴⁰ If the 70% royalty is selected, the royalty will be 70% of the list price without VAT, less delivery costs (average delivery costs are \$0.06 per unit sold, and vary by file size) for each eligible book sold to customers in the 70% territories⁴¹, and 35% of the list price for each unit sold to customers residing

³⁶ https://www.amazon.com/gp/feature.html/ref=apub_ws_rd?docId=1000664761

³⁷ Penguin Random House, Hachette, Harper Collins, Pan Macmillan, Simon & Schuster. For detailed information, see also <https://almossawi.com/big-five-publishers/>

³⁸ <https://kdp.amazon.com/help?topicId=A1H1OSSLAY4B4F>

³⁹ The 70% royalty option is for in-copyright works only. Works published before 1923, books consisting primarily of public domain content, and other public domain works are only eligible for the 35% royalty option.

⁴⁰ Visit <https://kdp.amazon.com/help?topicId=A29FL26OKE7R7B> for a more detailed explanation.

⁴¹ Andorra, Australia, Austria, Belgium, Brazil, Canada, France, Great Britain, Guernsey, Germany, Gibraltar, India, Italy, Ireland, Isle of Man, Japan, Jersey, Lichtenstein, Luxembourg,

outside the 70% territories. Delivery costs (if applicable)⁴² are equal to the number of megabytes that the digital book file contains, multiplied by a delivery cost rate that varies per country.

The e-book's List Price that the author chooses should not be higher than the list price in any sales channel for any digital or physical edition of the book. Furthermore, if 70% Royalty Option is chosen, the author must set and adjust the List Price so that it is at least 20% below the list price in any sales channel for any physical edition of the Digital Book. If an e-book is sold at a price below the chosen list price without VAT in order to match price with a third party selling any digital or physical edition of the book, or to match Amazon's price for a physical edition of the book, the author will receive 70% of the sale price for each eligible book sold to customers in the 70% territories, less delivery costs, and less any applicable VAT. Amazon details on its webpage a list of minimum of maximum and minimum List Prices by country⁴³.

2) Amazon own-published books: Amazon started its own book publishing unit in 2009. It is composed of thirteen different imprints⁴⁴. Amazon uses information such as customer reviews on Amazon websites to identify books and authors that show potential for greater sales. Amazon then partners with the authors to re-introduce their books to readers through marketing support and distribution into multiple channels and formats, such as the Amazon Books Store, Amazon Kindle Store, Audible.com, and national and independent bookstores via third-party wholesalers.

3) Finally, Amazon has agreements with publishers to re-sell their books through the Kindle store under the agency or wholesale model⁴⁵. Agreements with the Big Five publishers were not easy to settle⁴⁶. Amazon's initial idea was to sell books at cost or even at loss. Initially, the wholesale pricing model was adopted: publishers set their e-book list prices at a few dollars off the print price, and gave Amazon a 50 percent discount. Amazon then set the final price. Usually this price was below the wholesale price. Publishers raised their wholesale prices in order to pressure Amazon to raise its resale price, but Amazon maintained the levels. Later on, in January 2010, Apple launched the iPad and the iBooks Store. In this case, publishers adopted the agency model where they set the consumer price and Apple takes a 30% commission. Publishers then tried to push Amazon to change from the wholesale to the agency model. A first attempt was made by Macmillan who proposed to release Kindle versions of new books only seven months after the print publication. Amazon reacted by dropping Macmillan titles from the Kindle store. This led to frictions that were settled when the Big Five reached an agency contract agreement with Amazon. Some months later, the US Department of Justice started the Apple e-book case where publishers were accused of colluding over e-book prices. The final judgement in 2013 laid out a schedule for the various publishers involved to renegotiate e-book prices with retailers, Apple and Amazon. Hachette took the initiative that led to a deadlock in the negotiations with Amazon in 2014. After some official statements in the Amazon webpages⁴⁷ a final

Monaco, Mexico, Netherlands, New Zealand, San Marino, Switzerland, Spain, United Kingdom, United States, Vatican City.

⁴² Amazon does not deduct delivery costs from books within the 35% royalty option. In the 70% option, Delivery Costs are charged by Amazon

⁴³ <https://kdp.amazon.com/help?topicId=A301WJ6XCJ8KW0>

⁴⁴ <https://www.amazon.com/gp/feature.html?docId=1000664761>

⁴⁵ In the agency model, publishers fix a mandatory retail price and distributors get a fixed margin. Under the wholesale pricing model publishers set a Recommended Retail Price (RRP) and sell to retailers at roughly half the RRP. Retailers are then free to sell at whatever price they want.

⁴⁶ See Vanity Fair's article "The War of Words" for a detailed description of the process <http://www.vanityfair.com/news/business/2014/12/amazon-hachette-ebook-publishing>

⁴⁷ See: <https://www.amazon.com/forum/kindle?encoding=UTF8&cdForum=Fx1D7SY3BVSESG&cdThread=Tx3J0JKSSUIRCMT>

agreement was reached allowing Hachette to set its own prices for e-books. All in all, the pricing system for publishers' e-books is complex and depends on individual Amazon agreements with the industry. De los Santos and Wildenbeest (2014) provide some empirical evidence on the use of vertical price restraints in the market for e-books.

On 11th June 2015 the European Commission initiated formal antitrust proceedings against Amazon.com, Inc. and Amazon EU S.à.r.l. The case was triggered by clauses, known as Most Favoured Nation clauses (MFN), in Amazon's contracts with e-book publishers which aim at ensuring that publishers provide Amazon with similar terms and conditions as offered to Amazon's competitors. This may be in breach of EU and EEA rules prohibiting anticompetitive agreements and the abuse of dominant market positions. To address the Commission's concerns, Amazon offered a set of commitments, including the non-enforcement of the MFN clause.

In the EU, Denmark, France, Germany, Greece, Hungary, Netherlands, Poland and Slovenia have some type of Fixed Book Price (FBP) system, either by law or by contractual agreement between publishers and booksellers. Under a FBP system, books can be distributed to the final consumer only at a price that was fixed by the publisher in cooperation with booksellers. The FBP can specify the duration of the agreement after a book is published and discounts that may be available in specific cases. Both print books and e-books are sold for a single, fixed price across all sales channels. The book industry argues that the FBP helps to maintain higher prices and therefore higher revenue that ensures more and greater diversity of supply of books. Opponents claim that an industry functions best when it operates under free market conditions with variable prices. FBP affect e-book prices in several EU Amazon. Table 1 summarizes these agreements.

All prices in Amazon in the EU include VAT and taxes. Before 1st January 2015, VAT was applied according to the seller's country of residence. From January 1st on, VAT was applied according to the buyer's country of establishment. Table 12 shows VAT in those countries where Amazon Kindle operates. Prices on the Amazon screen include VAT and Amazon calculates the adjusted price before VAT. For example, when a self-publishing author puts a final price of €1.99 on his book, Amazon calculates royalties after deduction of the applicable VAT rate in the country of the buyer.

When goods are sold in other currencies, Amazon determines the exchange rate. Amazon explains this as follows: *"If you set your EU list prices to automatically calculate from your U.S. list price, your list prices for EU Kindle stores will automatically include VAT. For example, if you set a suggested U.S. list price of \$10.00, we convert that price to Euros for the German marketplace. If the exchange rate is 0.8 that day, the Amazon.de list price including VAT will be €8.00. For a sale to a German customer, we would deduct 19% VAT and calculate royalty on a VAT-exclusive list price of €6.72"*⁴⁸.

⁴⁸ <https://kdp.amazon.com/help?topicId=A30464Q6OVH578>

Table 1: Fixed Book Prices in EU countries

	Printed books		e-books		Implemented
	Duration of applicability	Maximum Discount	Duration of applicability	Maximum Discount	
France	2 years after publication, 6 months after last supply to booksellers.	5% (consumers), 9% libraries	No limit	No discount allowed	1981
Germany	18 months	No discounts allowed	18 months	No discounts allowed	2002
Italy	20 months after publication and 6 months from last bookstore purchase	15%; 20% for books sold during Book fairs or trades fairs.	-	-	2005
Netherlands	Publishers can reduce prices every 6 months	5-10% discount for students	-	-	2005
Spain	2 years after publication, 6 months after distribution in bookstores.	5%; 10% for World Book Day and Book fairs, 15% for public entities	2 years after publication, 6 months after distribution in bookstores.	5%; 10% for World Book Day and Book fairs, 15% for public entities	1975

Source: International Publishers Association

Table 2: VAT on e-books in Europe

Country	e-books
France	5.5%
Germany	19%
Great Britain	20%
Italy	4%*
Netherlands	21%
Spain	21%

Note: *4% will apply to eBooks with ISBNs. VAT rate of 22% will apply to eBooks without ISBNs.⁴⁹

⁴⁹ <https://kdp.amazon.com/help?topicId=A30464Q6OVH578>

Annex 2: Statistical tables

Table 3: Music categories in iTunes

All	Instrumental
Alternative	J-Pop
Anime	Jazz
Blues	K-Pop
Brazilian	Karaoke
Childrens Music	Kayokyoku
Chinese	Korean
Christian and Gospel	Latino
Classical	New Age
Comedy	Opera
Country	Pop
Dance	R and B/Soul
Easy Listening	Reggae
Electronic	Rock
Enka	Singer/Songwriter
Fitness and Workout	Soundtrack
Hip-Hop/Rap	Vocal
Holiday	World
Indian	

Source: Apple iTunes.

Table 4: VAT rates for music

Country	VAT %
AT	20
BE	21
BG	20
CY	19
CZ	21
DE	19
DK	25
EE	20
EL	24
ES	21
FI	24
FR	20
GB	20
HR	25
HU	27
IE	23
IT	22
LT	21
LU	17
LV	21
MT	18
NL	21
PL	23
PT	23
RO	20
SE	25
SI	22
SK	20

Table 5: Cross-border availability of iTunes songs and albums in the EU27

#countries	Songs		Albums		Availability by country		
	Number	%	Number	%	Songs	Albums	
1	1,056	2.9%	1,253	3.9%	BEL	92.3%	89.4%
2	761	2.1%	1,380	4.3%	NLD	92.3%	89.5%
3	496	1.3%	452	1.4%	DNK	92.3%	89.0%
4	103	0.3%	99	0.3%	FIN	92.2%	89.0%
5	88	0.2%	68	0.2%	PRT	92.2%	89.1%
6	95	0.3%	80	0.2%	SWE	92.1%	88.9%
7	46	0.1%	50	0.2%	ESP	91.8%	88.8%
8	59	0.2%	52	0.2%	LUX	91.8%	89.1%
9	74	0.2%	77	0.2%	GRC	91.2%	88.2%
10	69	0.2%	42	0.1%	AUT	91.1%	89.0%
11	45	0.1%	43	0.1%	SVK	90.9%	87.6%
12	84	0.2%	57	0.2%	ITA	90.9%	88.3%
13	68	0.2%	65	0.2%	CZE	90.9%	87.7%
14	133	0.4%	86	0.3%	DEU	90.8%	88.7%
15	322	0.9%	234	0.7%	EST	90.7%	87.6%
16	74	0.2%	57	0.2%	LTU	90.7%	87.6%
17	66	0.2%	57	0.2%	LVA	90.7%	87.6%
18	86	0.2%	59	0.2%	HUN	90.7%	87.7%
19	84	0.2%	60	0.2%	IRL	90.6%	88.3%
20	104	0.3%	106	0.3%	POL	90.1%	87.2%
21	322	0.9%	223	0.7%	FRA	90.1%	87.8%
22	232	0.6%	196	0.6%	ROU	89.9%	86.9%
23	404	1.1%	281	0.9%	SVN	89.9%	86.9%
24	631	1.7%	580	1.8%	GBR	89.5%	87.3%
25	981	2.7%	882	2.7%	BGR	89.2%	86.2%
26	1,380	3.7%	967	3.0%	CYP	88.5%	86.0%
27	28,942	78.6%	24,739	76.7%	MLT	88.4%	85.8%
Total	36,805	100.0%	32,245	100.0%		90.8%	88.0%
Availability		90.8%		88.0%			

Source: iTunes country stores and authors' calculations.

Table 6: Price differentiation for songs and albums in iTunes country stores in the EU27

Songs									Albums								
#Countries	All countries				Only Euro countries				#Countries	All countries				Only Euro countries			
	Price Dev	Total Dev	Positive	Negative	Price Dev	Total Dev	Positive	Negative		Price Dev	Total Dev	Positive	Negative	Price Dev	Total Dev	Positive	Negative
0	18,471	-	-	-	27,696	-	-	-		5,054	-	-	-	20,749	-	-	-
1	9,775	9,775	1,231	8,544	640	640	297	343		14,585	14,585	13,063	1,522	2,417	2,417	629	1,788
2	444	888	410	478	224	448	219	229		3,778	7,556	5,535	2,021	630	1,260	513	747
3	261	783	377	406	229	687	379	308		689	2,067	988	1,079	552	1,656	625	1,031
4	159	636	327	309	139	556	306	250		452	1,808	737	1,071	348	1,392	548	844
5	144	720	376	344	164	820	528	292		371	1,855	906	949	281	1,405	575	830
6	301	1,806	1,020	786	321	1,926	1,066	860		252	1,512	643	869	311	1,866	815	1,051
7	227	1,589	795	794	522	3,654	2,304	1,350		298	2,086	956	1,130	302	2,114	866	1,248
8	176	1,408	686	722	789	6,312	4,735	1,577		285	2,280	944	1,336	371	2,968	1,386	1,582
9	272	2,448	1,643	805	734	6,606	5,175	1,431		305	2,745	1,218	1,527	388	3,492	1,833	1,659
10	604	6,040	4,076	1,964	2,196	21,960	17,089	4,871		326	3,260	1,417	1,843	894	8,940	3,169	5,771
11	773	8,503	6,640	1,863	2,551	28,061	25,973	2,088		677	7,447	2,140	5,307	1,291	14,201	11,865	2,336
12	839	10,068	7,898	2,170	258	3,096	2,975	121		466	5,592	3,669	1,923	1,118	13,416	10,657	2,759
13	1,815	23,595	20,222	3,373	13	169	89	80		722	9,386	7,217	2,169	671	8,723	4,125	4,598
14	2,298	32,172	31,480	692	2	28	28	-		1,499	20,986	17,876	3,110	686	9,604	5,567	4,037
15	237	3,555	3,536	19	1	15	15	-		744	11,160	7,112	4,048	813	12,195	7,759	4,436
16	8	128	116	12						561	8,976	5,433	3,543	97	1,552	878	674
17	1	18	18	-						514	8,738	5,727	3,011	21	357	224	133
18										601	10,818	7,845	2,973	1	18	2	16
19										55	1,045	748	297				
20										11	220	142	78				
#observations		104,132	80,851	23,281		74,978	61,178	13,800			124,122	84,316	39,806		87,576	52,036	35,540
Sample size		902,338				702,432					765,906				598,536		
Overall index		11.5%	9.0%	2.6%		10.7%	8.7%	2.0%			16.2%	11.0%	5.2%		14.6%	8.7%	5.9%

Source: iTunes country stores and authors' calculations

Table 7: Price deviations for songs (countries ranked by column 7)

	Song with price deviations		Songs without price dev		#songs	%total	% price deviations		% positive deviations	% negative deviations	
	Rank	No rank	Rank	No rank	with rank		Rank	No rank	for ranked albums		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
GB	1,713	13,111	1,119	16,986	2,832	8.6%	60.5%	43.6%	27.3%	33.2%	
IE	947	5,357	1,714	25,325	2,661	8.0%	35.6%	17.5%	33.0%	2.6%	
DK	819	6,503	1,903	24,742	2,722	8.0%	30.1%	20.8%	29.7%	0.4%	
DE	817	5,956	2,088	24,576	2,905	8.7%	28.1%	19.5%	26.4%	1.7%	
FI	766	5,938	2,000	25,231	2,766	8.2%	27.7%	19.1%	26.9%	0.8%	
AT	740	5,956	2,058	24,758	2,798	8.3%	26.4%	19.4%	24.7%	1.8%	
SE	719	5,854	2,088	25,230	2,807	8.3%	25.6%	18.8%	25.3%	0.4%	
FR	741	5,859	2,164	24,389	2,905	8.8%	25.5%	19.4%	25.0%	0.6%	
PT	661	5,214	2,033	26,021	2,694	7.9%	24.5%	16.7%	24.3%	0.3%	
ES	654	5,393	2,039	25,719	2,693	8.0%	24.3%	17.3%	22.2%	2.1%	
BE	541	3,964	2,215	27,256	2,756	8.1%	19.6%	12.7%	19.0%	0.7%	
IT	547	3,350	2,291	27,254	2,838	8.5%	19.3%	10.9%	15.2%	4.1%	
LU	507	3,871	2,160	27,261	2,667	7.9%	19.0%	12.4%	18.1%	0.9%	
NL	488	3,968	2,273	27,247	2,761	8.1%	17.7%	12.7%	16.6%	1.1%	
PL	320	2,499	2,334	28,026	2,654	8.0%	12.1%	8.2%	0.5%	11.6%	
CZ	319	2,510	2,371	28,241	2,690	8.0%	11.9%	8.2%	0.2%	11.6%	
HU	276	2,592	2,361	28,141	2,637	7.9%	10.5%	8.4%	0.1%	10.4%	
GR	170	556	2,517	30,335	2,687	8.0%	6.3%	1.8%	4.7%	1.7%	
SI	60	447	2,469	30,104	2,529	7.6%	2.4%	1.5%	0.0%	2.3%	
RO	54	398	2,507	30,139	2,561	7.7%	2.1%	1.3%	0.0%	2.1%	
SK	55	498	2,578	30,321	2,633	7.9%	2.1%	1.6%	0.3%	1.8%	
LT	49	429	2,417	30,492	2,466	7.4%	2.0%	1.4%	0.1%	1.9%	
BG	50	391	2,504	29,891	2,554	7.8%	2.0%	1.3%	0.0%	2.0%	
EE	48	439	2,485	30,419	2,533	7.6%	1.9%	1.4%	0.0%	1.9%	
CY	45	278	2,385	29,854	2,430	7.5%	1.9%	0.9%	0.5%	1.3%	
LV	47	417	2,545	30,364	2,592	7.8%	1.8%	1.4%	0.0%	1.8%	
MT	32	199	2,403	29,913	2,435	7.5%	1.3%	0.7%	0.3%	1.0%	
TOTAL	12,185	91,947	60,021	738,235	72,206	8.0%	16.9%	11.1%	13.0%	3.8%	
Percent	11.7%	88.3%	7.5%	92.5%							

Source: Apple iTunes stores and authors' calculations. Lines in italics represent non-Euro stores where figures may be affected by exchange rates.

Table 8: Price deviations for albums (countries ranged by column 7)

	Albums with price deviations		Albums without price deviations		#albums with rank	%total	% price deviations & rank		% positive deviations	% negative deviations
Countries	Rank	No rank	Rank	No rank			Rank	No rank	for ranked albums	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SE	1,884	18,962	1,096	6,718	2,980	10.4%	63.2%	73.8%	58.7%	4.5%
GB	1,183	6,119	1,862	19,002	3,045	10.8%	38.9%	24.4%	15.8%	23.0%
DK	1,073	6,985	1,902	18,748	2,975	10.4%	36.1%	27.1%	33.8%	2.3%
IE	1,057	5,142	1,896	20,370	2,953	10.4%	35.8%	20.2%	22.9%	12.9%
AT	974	4,770	2,020	20,930	2,994	10.4%	32.5%	18.6%	22.1%	10.4%
IT	962	4,272	2,030	21,206	2,992	10.5%	32.2%	16.8%	18.1%	14.0%
ES	911	4,549	2,041	21,141	2,952	10.3%	30.9%	17.7%	16.8%	14.0%
DE	927	4,675	2,140	20,866	3,067	10.7%	30.2%	18.3%	17.6%	12.6%
FR	877	4,276	2,159	21,000	3,036	10.7%	28.9%	16.9%	15.5%	13.4%
BE	851	4,145	2,127	21,717	2,978	10.3%	28.6%	16.0%	16.6%	12.0%
NL	836	4,330	2,152	21,532	2,988	10.4%	28.0%	16.7%	14.9%	13.1%
LU	806	3,898	2,098	21,924	2,904	10.1%	27.8%	15.1%	20.0%	7.7%
FI	783	4,122	2,175	21,625	2,958	10.3%	26.5%	16.0%	20.3%	6.2%
PT	700	4,249	2,144	21,631	2,844	9.9%	24.6%	16.4%	16.7%	7.9%
GR	667	3,299	2,160	22,304	2,827	9.9%	23.6%	12.9%	3.3%	20.3%
CY	455	2,507	1,986	22,786	2,441	8.8%	18.6%	9.9%	2.7%	15.9%
BG	451	2,677	2,006	22,660	2,457	8.8%	18.4%	10.6%	2.5%	15.9%
RO	487	2,622	2,189	22,707	2,676	9.6%	18.2%	10.4%	2.5%	15.7%
HU	388	1,877	2,341	23,677	2,729	9.6%	14.2%	7.3%	2.5%	11.7%
SK	331	1,454	2,335	24,136	2,666	9.4%	12.4%	5.7%	4.3%	8.1%
SI	297	1,531	2,232	23,977	2,529	9.0%	11.7%	6.0%	2.5%	9.2%
CZ	292	1,702	2,518	23,762	2,810	9.9%	10.4%	6.7%	3.1%	7.3%
PL	291	1,720	2,557	23,553	2,848	10.1%	10.2%	6.8%	1.3%	8.9%
LT	172	1,571	2,066	24,434	2,238	7.9%	7.7%	6.0%	3.9%	3.8%
MT	191	1,303	2,326	23,853	2,517	9.1%	7.6%	5.2%	4.0%	3.6%
EE	147	1,642	2,380	24,076	2,527	8.9%	5.8%	6.4%	2.3%	3.5%
LV	141	1,589	2,351	24,160	2,492	8.8%	5.7%	6.2%	2.4%	3.3%
TOTAL	18,134	105,988	57,289	584,495	75,423	9.8%	24.0%	15.3%	13.5%	10.5%

Source: Apple iTunes stores and authors' calculations. Lines in italics represent non-Euro stores where figures may be affected by exchange rates.

Table 9: Music streaming services availability and pricing

Service	Free access	Cross border	#songs (mlns)	#users (mlns)	#countries	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HR	HU	IE	IT	LI	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Apple Music	Partial	No	40	20	26	9.99	9.99	4.99	NA	5.99	9.99	99kr	6.99	9.99	9.99	9.99	£ 9.99	6.99	NA	4.99	9.99	9.99	6.99	9.99	6.99	9.99	4.99	6.99	4.99	99kr	5.99	5.99	
Apple Music Family	Partial	No	40		26	14.99	14.99	7.99	NA	8.99	14.99	149kr	10.99	14.99	14.99	14.99	£14.99	10.99	NA	7.99	14.99	14.99	10.99	14.99	10.99	10.99	14.99	7.99	10.99	7.99	149kr	8.99	8.99
Spotify	Partial	No	30	100	25	9.99	9.99	4.99	6.99	5.99	9.99	99kr	6.99	9.99	9.99	9.99	£9.99	6.99	NA	4.99	9.99	9.99	6.99	9.99	6.99	9.99	9.99	19.99 zł	6.99	NA	99kr	NA	5.99
Spotify family	No	No			25	14.99	14.99	7.99	10.99	8.99	14.99	149kr	10.99	14.99	14.99	14.99	£14.99	10.99	NA	7.99	14.99	14.99	10.99	14.99	10.99	10.99	14.99	29.99 zł	10.99	NA	149kr	NA	8.99
Deezer	Partial	No	40	6	28	9.99	9.99	4.99	6.99	165	9.99	99kr	6.99	9.99	9.99	9.99	£9.99	6.99	6.99	1499	9.99	9.99	6.99	9.99	6.99	9.99	19.99 zł	6.99	6.99	99 kr	6.99	5.99	
Deezer Family	Partial	No	40		28	14.99	14.99	7.49	10.49	249	14.99	149kr	10.49	14.99	14.99	14.99	£14.99	10.49	10.49	2249	14.99	14.99	10.49	14.99	10.49	10.49	14.99	29.99 zł	10.49	10.49	149kr	10.49	8.99
Google Play Music	Partial	No	35		28	9.99	9.99	9.99	9.99	9.99	9.99	99kr	9.99	9.99	9.99	9.99	£9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	19.99 zł	9.99	9.99	99kr	9.99	9.99
Groove Music (Microsoft)	No	No	40		15	9.99	9.99	NA	\$9.99	NA	9.99	99kr	NA	9.99	9.99	9.99	£8.99	NA	NA	NA	9.99	9.99	NA	NA	NA	\$9.99	9.99	NA	9.99	NA	99kr	NA	NA
Tidal HiFi	No	No	45	4.2	26	19.99	19.99	NA	19.99	19.99	19.99	199kr	19.99	19.99	19.99	19.99	£19.99	19.99	NA	19.99	19.99	19.99	19.99	19.99	19.99	19.99	39.99 zł	19.99	19.99	19.99	19.99	19.99	
Napster	No	No	32	2.5	15	9.95	9.95	NA	NA	NA	9.95	99kr	NA	9.95	9.95	9.95	£9.99	6.95	NA	NA	9.95	9.95	NA	9.95	NA	NA	9.95	NA	6.95	NA	99 kr	NA	NA
SoundCloud	Yes (3h)	No	100	175	28	9.00	9.00	9.00	9.00	9.00	9.00	99kr	9.00	9.00	9.00	9.00	£9.99	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	19.99 zł	9.00	9.00	99 kr	9.00	9.00	
Amazon Prime Music	In Prime	No	2		4	7.99	NA	NA	NA	NA	7.99	NA	NA	7.99	NA	NA	£ 7.99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amazon Music Unlimited	No	No	40	<10	3	9.99	NA	NA	NA	NA	9.99	NA	NA	NA	NA	NA	£ 9.99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amazon Echo Plan	No	No	40		3	3.99	NA	NA	NA	NA	3.99	NA	NA	NA	NA	NA	£ 3.99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bandcamp	Yes	Yes	5			Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
CLIGGO MUSIC	Yes	Yes	40			Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
Earbits	Yes	Yes	0.02			Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
Jango	Yes	Yes				Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
NetEase cloud music	Yes	Yes	36	55		Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
Qobuz	No	No	30			9.99	9.99	NA	NA	NA	9.99	NA	NA	NA	NA	9.99	£9.99	NA	NA	NA	9.99	NA	NA	9.99	NA	NA	9.99	NA	NA	NA	NA	NA	NA
Saavn (only hindi music)	Partial	Yes	3	11		\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	\$4.99	
Note: all price in Euro unless otherwise indicated.																																	
Source: data collected by the authors from streaming service providers' websites.																																	

Table 10: Access from EU countries to Amazon e-book stores

Amazon store>	DE	ES	FR	GB	IT	NL	US
AT	Yes	No	No	No	No	No	Yes
BE	Yes	No	Yes	No	No	Yes	Yes
DE	Yes	No	No	No	No	No	Yes
ES	No	Yes	No	No	No	No	Yes
FR	No	No	Yes	No	No	No	Yes
GB	No	No	No	Yes	No	No	Yes
IE	No	No	No	Yes	No	No	Yes
IT	No	No	No	No	Yes	No	Yes
LU	Yes	No	Yes	No	No	No	Yes
NL	Yes	No	No	No	No	Yes	Yes
US	No	No	No	No	No	No	Yes

Source: Amazon webpage

Table 11: Cross-border availability of e-books in Amazon stores

# stores	#titles	%
1	6	1.0%
2	2	0.3%
3	1	0.2%
4	1	0.2%
5	7	1.2%
6	581	97.2%
Total	598	
Availability	98.6%	

Source: Amazon stores and authors' calculations.

Table 12: e-book VAT rates across Europe

Country	VAT rate
France	5.5%
Germany	19%
Great Britain	20%
Italy	4%*
Netherlands	21%
Spain	21%

*Note: *4% will be applied to eBooks with ISBNs. A VAT rate of 22% applies to eBooks without ISBNs.⁵⁰*

Table 13: Price deviations from the mode price

#countries	#titles	#Pdev	#PosPdev	#NegPDev	%Pos	%Neg
0	204	0	0	0		
1	233	233	124	109	53%	47%
2	59	118	27	91	23%	77%
3	21	63	13	50	21%	79%
4	26	104	59	45	57%	43%
5	15	75	63	12	84%	16%
6	40	240	240	0	100%	0%
Total	598	833	526	307		
Percent		23.2%	14.7%	8.6%		

Source: Amazon stores and authors' calculations.

⁵⁰ <https://kdp.amazon.com/help?topicId=A30464Q6OVH578>

Table 14: PlayStation Games availability by country

Country	Numbers		Availability	
	PS3	PS4	PS3	PS4
AT	1806	1332	88.0%	90.9%
BE	1733	1314	84.5%	89.6%
BG	1360	1341	66.3%	91.5%
CY	1194	1284	58.2%	87.6%
CZ	1863	1346	90.8%	91.8%
DE	1766	1329	86.1%	90.7%
DK	1790	1299	87.2%	88.6%
ES	1821	1346	88.7%	91.8%
FI	1752	1303	85.4%	88.9%
FR	1813	1347	88.4%	91.9%
GR	1866	1352	90.9%	92.2%
HR	1653	1337	80.6%	91.2%
HU	1361	1351	66.3%	92.2%
IE	1875	1353	91.4%	92.3%
IT	1816	1335	88.5%	91.1%
LU	1790	1332	87.2%	90.9%
MT	1196	1338	58.3%	91.3%
NL	1720	1320	83.8%	90.0%
PL	1792	1315	87.3%	89.7%
PT	1728	1324	84.2%	90.3%
RO	1199	1330	58.4%	90.7%
SE	1789	1229	87.2%	83.8%
SI	1817	1341	88.5%	91.5%
SK	1204	1338	58.7%	91.3%
UK	1881	1349	91.7%	92.0%
TOTAL	2052	1466	81.1%	90.5%

Table 15: Availability of Sony Playstation games in country stores in the EU

	PS3 games			PS4 games			
	#stores	#games	availability	cumulative	#games	availability	cumulative
1		122	0.3%	0.3%	39	0.1%	0.1%
2		24	0.1%	0.4%	34	0.2%	0.3%
3		14	0.1%	0.5%	11	0.1%	0.4%
4		3	0.0%	0.5%	9	0.1%	0.5%
5		2	0.0%	0.6%	7	0.1%	0.6%
6		5	0.1%	0.6%	4	0.1%	0.7%
7		6	0.1%	0.7%	7	0.1%	0.9%
8		30	0.6%	1.3%	3	0.1%	0.9%
9		11	0.2%	1.6%	0	0.0%	0.9%
10		13	0.3%	1.9%	3	0.1%	1.0%
11		2	0.1%	1.9%	1	0.0%	1.1%
12		11	0.3%	2.2%	9	0.3%	1.4%
13		4	0.1%	2.4%	4	0.2%	1.5%
14		15	0.5%	2.9%	3	0.1%	1.7%
15		13	0.5%	3.3%	4	0.2%	1.8%
16		20	0.8%	4.1%	7	0.3%	2.2%
17		63	2.6%	6.7%	6	0.3%	2.5%
18		114	4.9%	11.6%	9	0.5%	3.0%
19		257	11.7%	23.4%	18	1.0%	4.0%
20		47	2.3%	25.6%	9	0.5%	4.5%
21		145	7.3%	32.9%	14	0.9%	5.4%
22		56	3.0%	35.9%	10	0.7%	6.1%
23		44	2.4%	38.3%	22	1.5%	7.6%
24		131	7.6%	45.9%	169	12.2%	19.8%
25		900	54.1%	100.0%	1064	80.2%	100.0%
TOTAL		2052	81.1%		1466	90.5%	

Source: Sony Playstation stores and authors' calculations

Table 16: PS3 games

country	# +dev from mode	# -dev from mode	#total dev from mode	#games at mode price	#total games available	Availability	% pos dev	% neg dev
CY	0	0	0	1142	1142	60.5%	0.00%	0.00%
ES	0	0	0	1673	1673	88.6%	0.00%	0.00%
GR	0	0	0	1708	1708	90.5%	0.00%	0.00%
IT	0	0	0	1668	1668	88.3%	0.00%	0.00%
NL	0	0	0	1586	1586	84.0%	0.00%	0.00%
SI	0	0	0	1677	1677	88.8%	0.00%	0.00%
SK	0	0	0	1149	1149	60.9%	0.00%	0.00%
MT	0	40	40	1104	1144	60.6%	0.00%	3.50%
LU	0	42	42	1609	1651	87.4%	0.00%	2.54%
DE	1	0	1	1625	1626	86.1%	0.06%	0.00%
PT	1	0	1	1599	1600	84.7%	0.06%	0.00%
FI	1	0	1	1587	1588	84.1%	0.06%	0.00%
FR	2	0	2	1665	1667	88.3%	0.12%	0.00%
AT	2	0	2	1656	1658	87.8%	0.12%	0.00%
SE	2	87	89	1544	1633	86.5%	0.12%	5.33%
BE	2	0	2	1595	1597	84.6%	0.13%	0.00%
IE	3	0	3	1708	1711	90.6%	0.18%	0.00%
DK	3	1	4	1630	1634	86.5%	0.18%	0.06%
HR	3	69	72	1465	1537	81.4%	0.20%	4.49%
PL	4	178	182	1455	1637	86.7%	0.24%	10.87%
UK	5	220	225	1493	1718	91.0%	0.29%	12.81%
BG	4	4	8	1299	1307	69.2%	0.31%	0.31%
CZ	7	2	9	1696	1705	90.3%	0.41%	0.12%
RO	5	119	124	1023	1147	60.8%	0.44%	10.37%
HU	107	44	151	1158	1309	69.3%	8.17%	3.36%
TOTAL	152	806	958	37514	1888	81.5%		

Source: PlayStation country stores and authors' calculations. Note: price deviations for Finland ignore deviations <0.25 euro.

Table 17: PS4 games

country	# Pos dev from mode	# Neg dev from mode	#total dev from mode	#games at mode price	#total games available	Availability	% pos dev	% neg dev
CY	0	0	0	1284	1284	87.6%	0.00%	0.00%
DE	0	3	3	1326	1329	90.7%	0.00%	0.23%
IT	0	3	3	1332	1335	91.1%	0.00%	0.22%
NL	0	3	3	1317	1320	90.0%	0.00%	0.23%
PT	0	3	3	1321	1324	90.3%	0.00%	0.23%
ES	1	3	4	1342	1346	91.8%	0.07%	0.22%
SI	1	4	5	1336	1341	91.5%	0.07%	0.30%
SK	1	4	5	1333	1338	91.3%	0.07%	0.30%
GR	2	1	3	1349	1352	92.2%	0.15%	0.07%
BG	2	18	20	1321	1341	91.5%	0.15%	1.34%
RO	2	205	207	1123	1330	90.7%	0.15%	15.41%
FI	2	0	2	1290	1292	88.1%	0.15%	0.00%
FR	5	3	8	1339	1347	91.9%	0.37%	0.22%
MT	5	109	114	1224	1338	91.3%	0.37%	8.15%
AT	5	0	5	1327	1332	90.9%	0.38%	0.00%
HU	6	129	135	1216	1351	92.2%	0.44%	9.55%
LU	6	112	118	1214	1332	90.9%	0.45%	8.41%
BE	6	1	7	1307	1314	89.6%	0.46%	0.08%
SE	6	42	48	1181	1229	83.8%	0.49%	3.42%
PL	7	70	77	1238	1315	89.7%	0.53%	5.32%
HR	10	79	89	1248	1337	91.2%	0.75%	5.91%
DK	10	4	14	1285	1299	88.6%	0.77%	0.31%
UK	11	150	161	1188	1349	92.0%	0.82%	11.12%
IE	12	3	15	1338	1353	92.3%	0.89%	0.22%
CZ	12	29	41	1305	1346	91.8%	0.89%	2.15%
TOTAL	112	978	1090	32084	1466	90.5%		

Source: PlayStation country stores and authors' calculations. Note: price deviations for Finland ignore deviations <0.25 euro.

Table 18: Game price variation in EU country stores

console	meanPrice	stanDev	mode	mad	availability
Avg PS3	12.464	0.466	12.553	0.228	20.3
Avg PS4	27.582	1.485	27.957	0.759	22.6

Figure 2: Changing default country stores in Amazon Kindle

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Table 19: Cross-border access among e-book sellers in five EU countries

Germany					
<i>Bookseller</i>	<i>E-Book Sales</i>	<i>P-Book Sales</i>	<i>Cross Border Sales</i>	<i>Type of Provider</i>	<i>E-Reader*</i>
Thalia	Yes	Yes	Yes (selected countries)	Chain	Tolino
Hugendubel	Yes	Yes	Yes	Chain	Tolino
Buchhandel.de (Börsenverein)	Yes	Yes	No	Association	No
ebook.de (Libri)	Yes	Yes	Yes (selected countries)	Wholesaler	Tolino
buecher.de	Yes	Yes	Yes	Online	Tolino
Lehmanns Media	Yes	Yes	Yes (selected countries)	Chain	No
Mayersche	Yes	Yes	Yes (selected countries)	Chain	Tolino
Osiander	Yes	Yes	Yes (selected countries)	Indie	Tolino
Libri.Shopline (+/- 1000 Bookshops represented)	Yes	Yes	Yes (selected countries)	Wholesaler (White Label)	Tolino
KNVdigital E-Commerce Solutions (+/- 1300 Bookshops represented)	Yes	Yes	Yes (selected countries)	Wholesaler (White Label)	PocketBook
Umbreit (+/- 250 Bookshops represented)	Yes	Yes	Yes (selected countries)	Wholesaler (White Label)	PocketBook
Buchhandlung Schmid	Yes	Yes	No	Indie	No
Riemann Buchhandlungen	Yes	Yes	No	Indie	Tolino
Havelbuch (Zusammenschluss von 8 lokalen Buchhändlern)	Yes	Yes	No	Association	Tolino
Kohler Pollner	Yes	Yes	Yes	Chain	
Buchhandlung Werber	Yes	Yes	Yes	Indie	Tolino
Carolus Bücher	Yes	Yes	Yes	Indie	Tolino

United Kingdom							
Bookseller	E-Book Sales	P-Book Sales	Cross Border Sales	Type of Provider	E-Reader*	Web Presence	Notes
Internet retailers owned by overseas companies selling e-books to UK consumers [E & OE]							
Amazon	Yes	Yes	Yes	Internet retailer	Standard Kindle	www.amazon.co.uk	+/- 90% of all ebook sales in the UK.
iBook Store (Apple)	Yes	No	Yes	Internet retailer	iPads & other devices	www.apple.com/ibooks/	Based on EBUB standard, but not compatible with EPUB Open Standard
Google Play	Yes	No	Yes	Internet retailer	Android & Nook	www.play.google.com	
Kobo	Yes	No	Yes	Internet retailer	Kobo	www.kobo.com	
UK booksellers in membership with The Booksellers Association (BA) believed to be selling e-books [E & OE]							
Blackwell's	Yes	Yes	P-Books: Yes E-Books: No	Academic Bookshop Chain	Apple & other tablets/devices	www.bookshop.blackwell.co.uk	
Dawson Books	Yes	Yes	Yes	Library supplier	No	www.dawsonbooks.co.uk	Owner: Bertrams, wholesaler
Easons (N-Ireland)	Yes	Yes	P-Books: Yes E-Books: Yes (through kobo.com)	General Bookshop Chain	Kobo	www.easons.com	Owned by Easons, Republic of Ireland
Hive.co.uk	Yes	Yes	Not yet	Internet book retailer	No	www.hive.co.uk	Owner: Gardners, wholesaler. Works with local booksellers
Indie eBooksStore	Yes	No	No	Association	No	www.indieebook.co.uk	Owner: The Booksellers Association
John Smith	Yes	Yes	No	Academic Bookshop Chain	Kobo	www.johnsmith.co.uk	
Sainsbury	Yes	Yes	No	Supermarket	Variety of tablets & e-readers	www.sainsburysentertainment.co.uk	
Waterstones	Yes	Yes	P-Books: Yes E-Books: No	General Bookshop Chain	No	www.waterstones.com	Used to sell the Kindle until Autumn 2015
WH Smith	Yes	Yes	P-Books: No E-Books: Yes (through kobo.com)	General High Street Chain	Kobo	www.whsmith.co.uk	
190/786 independent booksellers	Yes	Yes	No	Kobo, Hive, Indie eBooksStore	Mainly Kobo	List of businesses can be supplied separately	
BA companies in this list account collectively for around 1,400 outlets							

France						
Bookseller	E-Book Sales	P-Book Sales	Cross Border Sales	Type of Provider	E-Reader*	Web Presence
Fnac	Yes	Yes	Yes	Chain	Kobo	www.fnac.fr
Decitre	Yes	Yes	Yes	Chain	TEA	www.decitre.fr
Cultura	Yes	Yes	Yes (Europe)	Chain	TEA	www.cultura.com
Place des libraires (+/- 500 bookshops represented)	Yes	Yes	No	Wholesaler	No	www.placedeslibraires.fr
ePagine (+/- 600 bookshops represented)	Yes	No	Yes	Wholesaler (White Label)	Bookeen/PocketBook	www.epagine.fr
Leslibraires.fr (+/- 160 bookshops represented)	Yes	Yes	Yes	Wholesaler (White Label)	No	www.leslibraires.fr
lallibrarie.com (+/- 1500 bookshops represented)	Yes	Yes	Yes	Wholesaler	Bookeen	www.lallibrarie.com
Chapitre.com + France Loisirs	Yes	Yes	Yes	Pure player + Club	TEA	www.chapitre.com
La Griffre Noire	Yes	Yes	Yes	Indie	No	www.lagriffrenoire.com
Gibert Joseph	No	Yes	Yes	Chain	Bookeen/PocketBook	www.gibertjoseph.com
Mollat	Yes	Yes	Yes	Indie	PocketBook	www.mollat.com
Sadel	No	Yes	Yes	Indie	Bookeen/PocketBook	www.savoirsplus.fr
Sauramps	No	Yes	Yes	Indie	Bookeen/PocketBook	www.sauramps.com
Cufay	Yes	No	?	Indie	No	www.cufay.fr
L'Appel du livre	Yes	Yes	?	Indie	No	www.appeldulivre.fr
Ombres blanches	Yes	Yes	Yes	Indie	Bookeen/PocketBook	www.ombres-blanches.fr
La Procure	Yes	Yes	Yes	Indie	Bookeen	www.laprocure.com
Le Grand Cercle	?	Yes	No	Indie	No	www.legrandcercle.fr
Eyrolles	No	Yes	Yes	Indie	No	www.eyrolles.com
L'Armitière	Yes	Yes	Yes	Indie	No	www.armitiere.com
Martelle	Yes	Yes	Yes	Indie	No	www.librairiemartelle.com
La boîte à livres	Yes	Yes	Yes	Indie	No	www.boitealivres.com
Le Divan	Yes	Yes	Yes	Indie	Bookeen/PocketBook	www.librairie-ledivan.com
Maupetit	Yes	Yes	Yes	Indie	Bookeen/PocketBook	www.maupetitlibraire.fr
Lamartine	Yes	Yes	Yes	Indie	Bookeen/PocketBook	www.lamartine.fr
Thuard	Yes	Yes	Yes	Indie	Bookeen/PocketBook	www.librairiethuard.fr

<i>Spain</i>						
<i>Bookseller</i>	<i>E-Book Sales</i>	<i>P-Book Sales</i>	<i>Cross Border Sales</i>	<i>Type of Provider</i>	<i>E-Reader*</i>	<i>Web Presence</i>
El Corte Ingles	Yes	Yes	Yes	Chain	Tagus	www.elcorteingles.es
Fnac	Yes	Yes	Yes	Chain	Various (Interoperable)	www.fnac.es
Casa del Libro	Yes	Yes	Yes	Chain	Tagus	www.casadelibro.com
Troa Librerias	Yes	Yes	Yes	Chain	No	www.troa.es
Agapea	Yes	No	Yes	Chain	No	www.agapea.com
Popularlibros	Yes	No	No	Indie	No	www.popularlibros.com
Laie	Yes	Yes	Yes	Chain	No	www.laie.es
Proteo Librerias	Yes	No	Yes	Indie	No	www.libreriaproteo.com
Cervantes	Yes	Yes	Yes	Indie	No	www.cervantes.com
<i>The Netherlands</i>						
Bol	Yes	Yes	Yes	Chain	Kobo	www.bol.com
Paagman	Yes	Yes	Yes	Indie	Sony	www.paagman.nl
Van Stockum	Yes	Yes	Yes	Chain	No	www.vanstockum.nl
AKO	Yes	Yes	Yes (Belgium only)	Chain	No	www.ako.nl
Libris	Yes	Yes	Yes	Association	Tolino	www.libris.nl
Bruna	Yes	Yes	Yes	Chain	No	www.bruna.nl
Boekhandel Broekhuis	Yes	Yes	No	Chain	No	www.boekhandelbroekhuis.nl
The Read Shop	Yes	Yes	Yes	Chain	No	www.readshop.nl
RDC read shop	Yes	Yes	No	CB platform	No	www.readshop.nl
Plantage	Yes	Yes	No	CB platform	No	www.plantage.nl
Computer boek	No	Yes	Yes (Belgium only)	CB platform	No	www.computerboek.nl
Management Boek	Yes	Yes	Yes, only to Belgium	CB platform	No	www.managementboek.nl

Source for all tables: *European and International Book Sellers Federation (EIBF)*

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