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There's no business like Show Business: Evaluating the impact of lifting geo-blocking restrictions on the audiovisual sector

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Executive Summary

Increased penetration of high-speed internet and rising numbers of internet users enable an ever-growing number of consumers to enjoy watching TV shows, movies, and documentaries online. The user penetration rate of Subscription Video on Demand services (SVoD) was more than 42% in Central and Western Europe in 2018. Within the largest European economies, the usage share of Netflix alone reached 45% of the SVoD market in France, 40% in Germany, and 35% in Spain and the UK. Large SVoD platforms such as Netflix and Amazon Prime Video allow consumers to watch a vast amount of productions whenever and wherever they like. Most platforms are however local, therefore we have encountered less than 10 platforms that operate in more than five EU countries. Amongst them are AcornTV, Amazon Prime Video, Crunchyroll, Netflix, and HBO.

Analysing internationally operating streaming platforms' catalogues, we find that cross-border availability is very low. The average EU-based VoD consumer has access to only 14% of all online film titles available in all EU member states. Availability is high in very populated EU member states but can be considerably below these 14% in less populated member states. Within platforms, cross-country differences tend to be smaller. Within Netflix, 37% of scripted content was available in all 14 EU countries in our sample. Only 15% of the content available in all 14 countries is produced in the EU, and of this 19% is branded as Netflix Original content.

Our study explores to what extent the welfare of consumers would change if the geo-blocking restrictions were lifted for audiovisual services, i.e. if any title would be available everywhere in the EU. To do this kind of counterfactual analysis, we need a measure of demand for each available title. This measure was only readily available for SVoD service Netflix. Hence, we use a dataset comprised of catalogue composition and actual streaming patterns of scripted content from Netflix, in which demand is measured as number of clicks for any given title. The data includes 14 countries within the EU and 6 countries outside of the EU. It spans the period from January 2018 to December 2019.

We estimate demand with a nested logit model, a widely used technique in empirical applications. For the estimation of demand, we introduce along with the characteristics of each title - such as Netflix-original, movie (as compared to TV shows), and whether the title was produced in the USA - a measure of quality defined by the IMDb rating. We use the results of the demand estimation to calculate each country's appeal for any given title in any given period. We can show that the correlation of appeal between countries inside the EU is high, on average 90%. In a further step, we use the measures of appeal to compute the status quo consumer surplus. For titles that are missing in a country, we simulate the appeal of a title by taking the average over the other countries' appeals, given that the title is available in at least two other countries. We do this once for simulating a liberalized EU streaming market and once for a worldwide-liberalized streaming market. Using the simulated appeals, we calculate consumer surplus for the two counter-factual scenarios.

We find that within a given genre, the correlation of preferences for titles is high; suggesting that adding more titles will cannibalize shares of incumbent titles. We find that lifting geo-blocking restrictions will increase consumer surplus per capita in two distinct scenarios. Simulating a scenario of free access to all titles available in any of the covered EU countries by all subscribers residing in those countries, suggests a small increase in consumer surplus of 0.13%. As we expected because of different catalogue compositions, a worldwide frictionless access results in an even higher increase in consumer surplus per capita, i.e. 0.21% on average in the 20 countries of

our sample. This figure increases to 0.31% if we are looking at the increase of welfare for EU citizens only.

There are indications why our results may either under- or overestimate the change in consumer surplus. On the one hand, they may underestimate the change in consumer surplus because we could only run simulations for titles that are available in at least two countries. Most of the local films are however only available in the production country's catalogue, we can therefore not evaluate how the export of e.g. Polish or Czech films would affect the welfare in other countries which have a large migrant population of the production country. On the other hand, our results may overestimate the change in consumer surplus because some of the films and TV shows really are tailored to a local taste and may not appeal to audiences in culturally more distant markets. A German film may work better for an Austrian or Swiss audience than for an Italian audience, while by construction a non-available film from Germany is treated exactly as a non-available film produced in the US.

The short-term review of the geo-blocking regulation included the consideration of a possible extension of the legislation to include audiovisual content. The descriptive analysis in the report shows that an extension would lead to a wider availability of content for consumers because geo-blocking is extensively used by SVoDs. The Commission has launched a dialogue on access and availability of audiovisual content, "in order to discuss concrete ways to foster the circulation of, and improve consumers' access to audiovisual content across the EU, before considering any follow-up measures." Our paper strengthens the point of the consumers' representatives in the dialogue, which support cross-border access of non-available titles.

There's no business like Show Business: Evaluating the impact of lifting geo-blocking restrictions on the audiovisual sector*

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Abstract

Increased penetration of high-speed internet and rising numbers of internet users enable an ever-growing number of consumers to enjoy watching TV shows, films, and documentaries online. At the same time, cross-border access to audiovisual content is often blocked due to licensing deals between rights holders and streaming platforms. The aim of the study is to quantify the extent to which consumer welfare would change if geo-blocking restrictions were lifted within the EU, so that a title that is available in any EU country would be available for every EU consumer. We use a novel dataset of actual streaming patterns from SVoD service Netflix to estimate demand with a nested logit model. In a counterfactual analysis, we find that consumer surplus per capita EU-wide would increase by 0.13% if geo-blocking restrictions were lifted within the EU. Consumer surplus per capita in the EU would on average increase even more, i.e. 0.31%, if frictionless streaming was possible between all countries in our sample.

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1 Introduction

The Single Market is the cornerstone of the EU’s domestic economic policy. It seeks to reduce trade costs and eliminate regulatory barriers to cross-border trade in order to facilitate the free movement of goods, services, people and capital between EU Member States. This includes free trade in online services. While online services can in principle be traded worldwide without trade costs, empirical evidence (Blum & Goldfarb, 2006; Gomez-Herrera, Martens, & Turlea, 2014) shows that we are still far away from the “death of distance” hypothesis (Cairncross, 1997). Cultural distance and linguistic fragmentation induce trade costs in the EU online market on the consumer side. Moreover, online sellers may deliberately adopt a strategy of geographical market segmentation because they benefit from price and product discrimination between national markets. They can geo-block exports of online services by imposing access barriers to online consumers who are residents in other countries, for instance by rejecting foreign IP addresses, payment cards and delivery addresses. Geo-blocking goes against the Single Market principles. In 2018 the EU introduced a Regulation (EU/2018/302), henceforth “the geo-blocking regulation”, that aims to give all EU consumers equal rights to access a trader’s goods or services, under the same terms, irrespective of their location, nationality or place of residence. Up to now, the Regulation does not cover copyright-protected media content services.

Geo-blocking is widely practised in the EU in copyright-protected content such as digital music, films, e-books, and games. Though product availability is very similar across countries for some content types, geo-blocking facilitates price and quality discrimination in these services. It is especially prevalent in digital film or subscription Video-on-Demand (SVoD) streaming services where cross-border availability is very low. The average European SVoD consumer has access to only 14.1 per cent of film titles available online in all EU member states (Broocks, Duch-Brown, Gomez-Herrera, & Martens, 2020). Availability is higher in larger EU member states but can be considerably below this figure in smaller member states. Geo-blocking reduces product variety, consumer choice and potentially welfare. The EU is considering to extend the prohibition of geo-blocking to copyright-protected online content services. This runs into opposition from content providers and distributors, in particular from the film industry, who claim that it will undermine their national markets based

business models and reduce revenue as well as consumer welfare (Oxera, Oliver & Ohlbaum, 2016). They also claim that consumer demand for foreign films is weak because of cultural differentiation in the EU market. At the same time, large global SVoD distribution platforms are rapidly increasing their market shares in the EU while offering much higher cross-border availability and language choice options in their catalogues than what prevails in theatrical exhibition.¹

While there is plenty of empirical evidence on the extent of geographical market segmentation in SVoD services in the EU (Aguiar & Waldfogel, 2018; Alaveras, Gomez-Herrera, & Martens, 2015; Batikas, Gomez-Herrera, & Martens, 2015; Gomez-Herrera & Martens, 2015; Grece & Jiménez-Pumares, 2019), there is hardly any empirical work on the welfare effects of lifting geo-blocking restrictions in SVoD. A major obstacle to empirical work on geo-blocking in audiovisual services is the fact that SVoD service providers do not release data on consumer demand for the film titles in their online catalogues. Up to now, studies relied on consumer surveys (VVA, 2020), or on consumer demand in offline cinema as a proxy for online demand (Aguiar & Waldfogel, 2019). McKenzie, Crosby, Cox, & Collins (2019) collect experimental data and conduct surveys in order to analyse viewing activity, switching behaviour, and willingness-to-pay of consumers.

In this study, we explore the potential welfare effects for consumers of lifting geo-blocking restrictions in SVoD services. We estimate a micro-economic model of demand for films and TV shows, using data on streaming patterns from Netflix, one of the largest SVoD streaming service providers in the EU. According to its own data, Netflix had 167 million subscribers globally by the end of 2019, and of them 52 million in Europe, the Middle East and Africa (Netflix, 2020). In 2019 the overall number of subscribers to any SVoD in Europe exceeded for the first time 100 million and is projected to be close to 200 million by 2025 (European Audiovisual Observatory, 2020; DigitalTV Europe, 2020). Within the largest European economies, the usage share of Netflix in 2018 reached 45 per cent of the SVoD market in France, 40 per cent in Germany, and 35 per cent in Spain and the UK, according to Statista (2020).

¹For our sample we find that films, whose main production country is a EU member state, are available in 4.2 of the 14 EU countries' Netflix catalogues on average. The data of Aguiar & Waldfogel (2019) covers films displayed in cinemas in 16 EU member states and they report that films produced in the EU are shown in 3 or less countries on average.

We understand that using Netflix data only will provide a lower bound estimate for effects of a freer streaming market, as there already is a significant overlap of titles across national Netflix catalogues. To the best of our knowledge, this is the first empirical estimate of welfare effects from free trade in SVoD services using consumption data at the title level. This data is not readily available and not published by streaming platforms themselves. We use Netflix subscribers' click behaviour to construct more objective proxies for consumer demand in film and TV show streaming.

We adapt the structural model of demand and simulation technique introduced by Aguiar & Waldfogel (2019) in order to compute consumer surplus for both traded and non-traded titles in our sample of 20 countries. We find that within a given genre the correlation of preferences for titles is high, suggesting that adding more titles will cannibalize shares of incumbent titles. Simulating a scenario of free access to all titles available in any of the covered EU countries by all subscribers residing in those countries, suggests a small but significant consumer surplus per capita increase of 0.13%. Simulating a scenario of free access to all titles available in any country of the sample suggests a consumer surplus increase of 0.36% per capita for consumers residing in the covered EU countries.

The remainder of the paper is organized as follows. The next section presents the data used for the empirical analysis. Section 3 describes the composition and specificities of the national Netflix catalogues of our final sample. Section 4 describes the theoretical model underlining our regression analysis. Section 5 presents and discusses results of the demand estimation and the simulations. Section 6 concludes.

2 Data

In order to estimate demand on title level, we need data that captures sales of individual titles. For SVoD services, this data is not readily available. Netflix neither reveals the number of its subscribers by country, nor detailed statistics about who watches what. The data we obtained from SimilarWeb offers the unique opportunity to identify individual titles by recording clicks on distinct pages under the Netflix domain. We use the number of clicks on an individual title as proxy for sales. For other streaming platforms, such detailed data is

not so easily available, we therefore reduce our study to only one platform for the moment. We complement the demand data with more comprehensive information on title level scraped from Netflix, and with production- and distribution-related information obtained from Ampere Analysis. We extract economic indicators on country-level from the Worldbank’s World Development Indicators and the OECD. Further controls are obtained from IMDb.

We extract click data for Netflix from SimilarWeb, a company that provides data on usage behaviour of internet and mobile phone users.² Starting from the popular pages endpoint, which collects the 1000 most clicked pages within a domain each month, we extract a list of pages on the netflix.com domain and their corresponding traffic share per page for Desktop traffic.³ The time span ranges from January 2018 to December 2019, data is aggregated to half-years. It is possible to download the data at a more disaggregated level, however the number of clicks directed at watching is extremely low, as most of the clicks go to search.

Based on the structure of the url of each page, we can differentiate between different activities on the platform. For example, we can tell which share of clicks is spent on browsing and searching activities, and also which share is spent on actually watching a show. On average, 40% of clicks are within the “browsing and searching” categories, 5% of clicks go to inspecting a specific title, 51% of clicks are within administration and login, and only 3% of clicks are within the “watch” category.⁴

The dataset comprises 14 EU member states plus Australia, Canada, Norway, Switzerland, the UK, and the US. The countries were chosen for their joint availability in both SimilarWeb and Ampere databases. The share that is allocated to each title can be translated into the number of clicks when using a second file downloaded from SimilarWeb, e.g. geography information which includes the number of clicks per country to the Netflix domain for each month. Since the shares that are captured by SimilarWeb only add up to 38%-47%,

²Read more on where SimilarWeb obtains data here: <https://support.similarweb.com/hc/en-us/articles/360001631538-SimilarWeb-Data-Methodology>

³Unfortunately we neither observe title-level usage patterns of the Netflix App on Android and Mac OS, or on smart TV’s. We have to assume that Netflix usage is the same when watching in a browser window and when watching on other devices.

⁴The data does not allow to identify whether a user finishes watching a show or only starts to watch and resumes at another point in time, which would count as two watching instances.

depending on the country, we know that not all clicks to titles are captured. SimilarWeb does not provide further data for lack of accuracy. As a result of actual watching patterns and lack of data on the more unpopular titles, we observe clicks in the “watch” category for only 1%-4% of scripted titles in the full country catalogues. Figure 1 and Figure 2 break down the accessed titles by country and content type. They show that for TV shows, a higher share of the catalogue is accessed than for films. Moreover, they indicate that titles marked as Netflix Original are accessed more often relative to non-Originals.

Each page in the list of titles that are watched provides a unique title id, which allows us to scrape the corresponding title overview page on the Netflix website in order to obtain more information on each title.⁵ We scrape the lists of title pages country-wise and use corresponding VPN servers. From the Netflix title pages, we collect information on title, release year, duration (films), number of seasons (TV shows), and genre. We observe that while productions branded as Netflix Originals are usually available in almost all countries, other titles such as *Gladiator* or *Intouchables* are only available in a handful of national catalogues.

We merge the SimilarWeb and Netflix data to Ampere data. Their Analytics SVoD App provides a large database that contains detailed information about the full catalogues of 196 SVoD platforms worldwide. In this paper however, we will focus solely on Netflix. We use the Netflix catalogue information for scripted titles available in the 20 countries of our sample. For the regressions, we use the information on primary production country, primary genre, Netflix Original, and the IMDb id for each title.⁶ For all titles that cannot be matched to a title in the click data obtained from SimilarWeb, we allocate random values from a uniform distribution over the interval (0,72) to replace the missing value of clicks.⁷ The interval was chosen because it can be assumed that each titles is at least watched once during the period of half a year in a given country and the lowest number of clicks that we observe in our data is 72.

Additional variables for the regressions come from two different sources. Population data are taken from the World Development Indicators. Broadband

⁵Title pages are of the form <https://www.netflix.com/title/80057281> (*Stranger things*).

⁶<https://www.ampereanalysis.com/products/about/analytics-svod>

⁷As mentioned above, we only obtain information on the number of clicks directed at Netflix titles that were on the list of the top 1000 most clicked pages during any month of the period January 2018 to December 2019. Therefore we have to make assumptions about the remaining titles in the catalogues.

penetration and GDP at the end of each semester come from OECD data. Data on the number of awards and nominations won by a title were scraped directly from the IMDb webpage. The user rating a title obtained and the number of votes were obtained from their title ratings dataset. Descriptive statistics can be found in Table 1. In the pooled data, 72% of observations are film titles, while the remaining 28% are series titles. As mentioned previously, other non-scripted formats such as stand-up comedy or documentaries are excluded from the analysis. There is a large variation in quality of a title, ranging from 1.3 (Kiara the Brave) to 9.5 (Breaking Bad), measured as the IMDb rating in February 2019.

3 Netflix catalogues

Netflix catalogues include a variety of documentaries, TV shows, films, and other formats such as stand-up comedy and game shows. Some of this content is branded as “Netflix Original”. This content is either commissioned, funded, or produced by Netflix, or Netflix has secured exclusive streaming rights in at least one market.⁸ For the remaining content, Netflix bought the license for video on demand distribution for a certain market and time period. Netflix Original availability may vary across countries because prior to its international expansion, Netflix struck licensing agreements for long periods of time and entered the respective markets before these agreements expired.⁹ Netflix catalogues do not only include their own original content but also other TV networks’ or streaming platforms’ originals, e.g. HBO Originals or Showtime Originals.

In each of the 20 countries of our sample, catalogue sizes have increased over the course of the 24 months covered by our data. The countries with the largest catalogues of scripted content are Denmark, the Czech Republic, the UK, and Poland, all including more than 4,500 titles. The most pronounced increases in catalogue size over the two-year period were for Denmark and Poland with increases of 86% and 102%, respectively. These massive increases were driven by the addition of TV show titles rather than by the addition of films (Denmark: +130% vs. +73%, Poland: +135% vs. 91%). The ratio of TV

⁸For a more thorough discussion of Netflix “Originals” see for example Barthes (2018).

⁹<https://help.netflix.com/en/node/4976?ba=SwifttypeResultClick&q=license>

show titles over film titles varies significantly across countries, ranging from 37% in Canada and Denmark to 56% in Spain. More detailed data regarding period-to-period changes can be found in Table 2.

3.1 Overlap of national catalogues

Availability of content on the Netflix platform varies by country. Some pairs of national catalogues overlap more than others, especially for countries that are geographically close and share the same language, e.g. Canada and the US, or Austria and Germany. Our sample includes 20 countries, 14 EU countries and 6 non-EU countries.¹⁰ Figure 3 shows the overlap of TV shows between any two catalogues in the second semester 2019. Figure 4 shows the overlap of films for the same period. The darker a tile of the heatmap, the higher the overlap of titles. Values are not symmetric as catalogue sizes vary across countries. We find that the catalogues for the United Kingdom and Ireland are almost identical (97 per cent of films are overlapping for the UK and 99 per cent for Ireland, as compared to their full catalogues, 99 of TV shows for both). The only other pair for which catalogues are almost identical is Norway and Sweden, for other pairs the overlap is more asymmetric. The lowest figure we find for the overlap of TV shows is Italy and the US in terms of the full US catalogue. For films, the lowest overlap is between Spain and the US in terms of the full US catalogue. In general, overlap is much higher for TV shows than for films (82% vs. 62% on average).

When considering all periods and countries in our dataset, we find 13,493 unique scripted titles within the content types TV show and film. Of these 13,493 titles, 1,003 are branded as Netflix Originals. Almost 12% of all titles (1,609) are available in all 20 countries of the sample. Of those, 752 titles are Netflix Originals (282 films, 470 TV shows). Overall title availability ranges between 30% and 53%, and is lowest for subscribers in Spain and highest for subscribers in Canada.¹¹ On average, Netflix Original films are shown in 18.3 out of the 20 countries in our sample, while non-original films are available in 6.8 countries on average. For TV shows, these averages are slightly higher

¹⁰EU countries: AT, BE, CZ, DE, DK, ES, FI, FR, IE, IT, NL, PL, PT, and SE. Non-EU countries: AU, CA, CH, GB, NO, and US.

¹¹Please note that these figures are substantially higher for Netflix than country-wide averages that also take into account regional SVoD services. Moreover, our data covers mostly the large economies within the EU.

(18.9 versus 8.8). These measures are on a title level, and do not take into account that the number of available seasons for a TV show may differ across countries. They do suggest however that restricting geo-blocking will allow a more than proportional access to local productions as compared to usually more mainstream Netflix Originals.

3.2 Distribution of production countries in catalogues

The production country plays a crucial role in determining the number of countries where a title is available. The top 5 production countries of titles available in the 20 national catalogues of our data are the US, the UK, India, France, and Canada. These 5 production countries account for 71% of distinct titles in our final dataset. Regarding titles (co-)produced in the (pre-Brexit) EU, we find a similar ranking of production countries as Grece & Jiménez-Pumares (2019) find for a sample of 136 SVoD catalogues in 20 EU countries: the top 4 exporting countries of TV Shows from the EU are the UK, France, Germany, and Spain. While Italy follows in fifth place in their data, the Netherlands follow in 5th place in ours.

Table 3 and Table 4 show the distribution of production countries of TV shows and films within the national catalogues in our sample. The largest number of titles in any national catalogue comes from the US. From no other production country will you find more titles in any country’s Netflix catalogue. Many more titles from India are prevalent in the English-speaking markets Australia, Canada, Ireland, the UK and the US than in the other markets. Another interesting fact: Sometimes more titles produced in a given country are available in another country’s catalogue, e.g. in Canada and the US there are more Australian films available than in Australia. Likewise, more Austrian films are available in Germany and the Netherlands than in Austria.

Table 3 and Table 4 also point to the fact that some European countries are almost not represented in Netflix catalogues, such as Portugal (5 distinct titles, all films) or Switzerland (9 distinct titles). Films that are translated into Portuguese usually only have the Brazilian Portuguese dubbing. Moreover, migrant stocks do not seem to have an impact on a country’s catalogue. For example, there are not more Polish films available in Germany or the UK than in Italy.

4 Model

In this section we describe our model of demand for streaming of audio-visual titles, including both TV shows and films. We do not intend to model who becomes a subscriber for Netflix but rather to model the demand for a given title once you are a subscriber. Instead of price as element of the demand equation, we insert quality as measured by the IMDb rating. In the second part of the section, we motivate identification and in the third part we present the formulae that are used to compute consumer surplus.

4.1 Demand

A Netflix subscriber i can choose to watch a title out of all the titles available in the national Netflix catalogue of country c where the subscriber is a resident. As catalogues constantly change, the choice sets of titles vary both across countries and over time. Define J_{ct} as the set of individual titles j that are available in country c at time t . The choice sets are divided into different nests g , which refer to the primary genre associated with a title and one additional category for the outside good. Dropping the time subscript for better readability, the indirect utility of subscriber i in country c for title j is represented by

$$\begin{aligned} u_{ijc} &= x_{jc}\beta + \alpha \text{quality}_j + \xi_{jc} + \zeta_{igc} + (1 - \sigma)\varepsilon_{ijc} \\ &= \delta_{jc} + \zeta_{igc} + (1 - \sigma)\varepsilon_{ijc}, \end{aligned} \tag{1}$$

where δ_{jc} is the mean utility, or mean gross valuation, of title j in country c .¹² As is convention, we normalize the mean utility for the outside good to zero, $\delta_{0c} = 0$. For all other goods, the mean utility depends on x_{jc} , a vector of observed product characteristics. The parameter ξ_{jc} represents characteristics that are unobserved by the econometrician, best interpreted as appeal of a title j in country c . The second part of the indirect utility is the consumer-specific deviation of utility around the mean. Both ζ_{igc} , and ε_{ijc} are random variables, the first one being a common valuation for all titles in the same

¹²Quality is measured as the IMDb rating which does not vary by country. The mean utility δ_{jc} therefore only varies by country because of the choice of covariates and the country-specific valuations.

primary genre g , the latter being the individual-specific valuation for title j . According to Cardell (1997), ε_{ijc} is extreme value, therefore $[\zeta_{igc} + (1 - \sigma)\varepsilon_{ijc}]$ is also extreme value distributed.

The nesting parameter σ measures the subscriber’s preference correlation for titles in the same primary genre. As σ approaches 1, preferences for titles within a genre are perfectly correlated. At the other extreme, if σ gets closer to 0, the model reduces to a simple logit and subscribers perceive all titles as symmetric substitutes. In line with random utility maximization, we assume that $\sigma \in [0, 1)$, implying that substitution within genres is higher than substitution between genres. Hence, the nesting parameter enables us to assess to what extent subscribers view titles in the same genre as closer substitutes.

We assume that all subscribers choose the titles that maximize their utility. We can thus obtain the individual choice probabilities for each title j in country c , including the probability of choosing the outside good (see McFadden, 1978). At the aggregate level, these country- and title-specific choice probabilities coincide with their market shares in their respective potential markets L_c . We assume that the size of the potential market equals the number of internet users among the population in country c multiplied by the mean number of monthly clicks per unique user to Netflix, multiplied by six because we look at six-month intervals. Following Berry (1994), the market share system can be inverted so that the estimating equation for mean utility levels of title j in country c becomes

$$\ln(s_{jc}) - \ln(s_{0c}) = x_{jc}\beta + \alpha \text{quality}_j + \sigma \ln(s_{j|gc}) + \xi_j, \quad (2)$$

where $s_{jc} = \frac{q_{jc}}{L_c}$ and s_{0c} on the left hand side are the market shares of title j and the outside good in country c , respectively, and $s_{j|gc}$ is the market share of title j in genre g in country c . Please note that there is no price variable in this model because once the subscription to Netflix is paid, no further fee occurs for watching a title. We rather include a quality measure in the regression, the title’s IMDb rating.

4.2 Identification

The parameter σ measures the degree of substitutability of titles within genres. Given the panel structure of our data, we observe both the popularity of titles

within any genre and the addition of titles over time. Identification of σ is driven by how the total inside share of titles $s_{j|gc}$ changes as the number of titles in the choice set varies.¹³ As σ approaches 1, substitutability is high and the inside share will not vary much because adding new titles will only cannibalize other titles' shares. When σ equals 0, the model reduces to a simple logit where some consumers of the outside good (i.e. not watching anything at all, or watching linear TV as our consumer base consists of subscribers) will always substitute to a new title when it is added to the choice set. In this case, we can observe a market expansion effect.

By construction, the group market share is endogenous in Equation (2). A positive unobserved shock to demand for a given title could result in a higher within group market share and at the same time in a higher value of our quality measure. To prevent this, we use both the variables suggested by Berry, Levinsohn & Pakes (1995) (sums of the characteristics and counts of the number of titles over the different countries) and those suggested by Verboven (1996): the sums and counts of the titles by groups (primary genre) as instruments. The underlying assumption is that product characteristics are exogenous and therefore orthogonal to the error terms.

4.3 Consumer Surplus

We use the coefficients for quality and the level of title substitutability within the nest (i.e. α and σ) from the demand estimation to obtain the gross valuations δ_{jc} of each title j in country c . Following Aguiar & Waldfoegel (2019), these can be interpreted as measures of appeal and are computed as follows

$$\delta_{jc} \equiv \ln(s_{jc}) - \ln(s_{0c}) - \sigma \ln(s_{j|gc}).$$

We can then calculate the consumer surplus (CS) for each country and period using the following equation:

$$CS_c = \frac{L_c}{\alpha} \ln \left(1 + \sum_{g=1}^G D_{J_g}^{1-\sigma} \right), \quad (3)$$

¹³The market share of title j in genre g in country c is given by $s_{j|gc} = \frac{q_{jc}}{\sum_{j \in J_{gc}} q_{jc}}$. Time subscripts suppressed.

where $D_{J_g} = \sum_{j \in J_g} e^{\frac{\delta_{jct}}{(1-\sigma)}}$, and J_g is the set of titles within genre $g = 1, \dots, G$. Again, time subscripts have been dropped for better readability.

5 Estimation

We first estimate the streaming demand of Netflix subscribers using two-stage least squares (2SLS). We then run simulations in order to obtain measures of appeal for non-traded titles. Finally, we compute the potential welfare changes of opening up Netflix catalogues within (i) the EU member states and (ii) all countries in our sample.

5.1 Estimation results

Table 5 presents our results for the regression of the aggregate nested logit model specified by Equation (2). Titles are grouped according to their primary genre: *Action & Adventure*, *Children & Family*, *Comedy*, *Crime & Thriller*, *Drama*, *Horror*, *Romance*, and *Sci-Fi & Fantasy*.¹⁴ Apart from the quality and the nesting coefficients, each specification includes parameters representing the valuations of other title characteristics, such as whether the title is a Netflix Original, a film (as compared to TV shows), the age of the title, award wins and nominations, and whether the title was produced in the USA, in the EU, or domestically. Moreover, we include broadband coverage and gdp as market- and time-specific controls. For all specifications, market- and time-fixed effects were included to capture country idiosyncrasies.

The model is estimated using instrumental variables (IV) to account for the endogeneity of the quality variable and the within group market shares, which may all be positively correlated with the error term. According to a Wu-Hausman test, the null hypothesis of the exogeneity of the quality term and within genre market shares may be rejected at a significance level of 1%. As mentioned above, we use both the variables suggested by Berry et al. (1995) and those suggested by Verboven (1996). We also use Stock and Yogo's test to confirm that our instruments are not weak. For all specifications, we find

¹⁴A two-level nested logit model that includes the choice between film and TV show was not supported by the data, therefore we adhere to the one-level structure.

significant and positive quality coefficients and significant and positive nesting coefficients within the interval $\sigma \in [0, 1)$. This implies that titles of the same genre are the closest substitutes. For our preferred specification in column (4), we find a quality coefficient of 0.06 and a significant and positive nesting coefficient of 0.857. The coefficient σ being close to one suggests high substitutability of titles within genre. This means that adding more titles will cannibalize shares of incumbent titles. Most of the parameters of the product characteristics are significant, suggesting for example that titles branded as Netflix Originals and domestic titles are preferred.

5.2 Simulation

Motivated by the possibility of an extension of the geo-blocking regulation, we are interested in the welfare effects of lifting geo-blocking restrictions between regions. We simulate two scenarios: (i) titles available anywhere in our EU-subsample are made available everywhere in the 14 sampled EU countries, and (ii) titles that are available in any country of the data set are made available in all 20 countries of the data set. As defined in Equation (3), we need the δ_{jc} for each title in each country to calculate consumer surplus. However, for titles that are not in a given country’s catalogue, these corresponding values are not available.

We can show that the correlation of δ_{jc} between countries inside the EU is close to 90%, for Germany and Spain it amounts to 92.0%. If we plot δ_{jSpain} and $\delta_{jGermany}$ for titles in both countries’ Netflix catalogues, and add a regression line and a 45 degree line, we find that the regression line is very close to the 45 degree line (See Figure 5). This finding implies that the appeal of titles across the two countries is very similar. The correlation we find looks almost like the one found by Aguiar & Waldfogel (2019) for films for the same country pair. Appeals are also highly correlated among other country pairs. We rely on this fact in our subsequent simulation.

Following the methodology described in Aguiar & Waldfogel (2014), Aguiar & Waldfogel (2019), and Ferreira, Petrin, & Waldfogel (2013), we predict the appeal of non-available titles. In order to predict δ_{jc} for titles that are not available in country c accurately, we only keep observations of titles that are present in at least two countries in the same period. We start the multi-step

computation by first regressing the appeal of individual titles against each other for any given country pair c and c' :

$$\delta_{jct} = A_{cc'} + B_{cc'} \delta_{jc't} + \sum_{s \neq c, c'} \tau_s T_{ts} + \lambda_t + \mu_{jct}, \quad (4)$$

where λ_t is a set of time dummies, and T_{ts} captures in which of the other 18 countries (12 in scenario (i)) title j appears in the same period t . $A_{cc'}$ is the constant and $B_{cc'}$ is simply the coefficient for appeal in country c' . In the second step, for each title j that is not available in country c , we construct δ_{jc} as the average of the predicted $\delta_{jc'}$ from the regressions for each c' in which the title is traded.

Using the simulated deltas, we can compute the differences between consumer surplus in the two scenarios and the Status Quo consumer surplus as follows:

$$\Delta CS_c = \frac{L_c}{\alpha} \left[\ln \left(1 + \sum_{g=1}^G D_{J'_g}^{1-\sigma} \right) - \ln \left(1 + \sum_{g=1}^G D_{J_g}^{1-\sigma} \right) \right], \quad (5)$$

where $D_{J'_g} = \sum_{j \in J'_g} e^{\frac{\delta_{jc}}{(1-\sigma)}}$, $D_{J_g} = \sum_{j \in J_g} e^{\frac{\delta_{jc}}{(1-\sigma)}}$, and J'_g is the set of titles available in the given free trade scenario as compared to the set of titles J_g that is available under the Status quo in country c within genre $g = 1, \dots, G$. Again, time subscripts have been dropped for better readability.

Following Aguiar & Waldfoegel (2019), we compute bootstrapped standard errors for each scenario in four steps. Firstly, we use the information of the coefficients' distribution obtained from the estimation results to take 100 random draws of α and σ . Secondly, for each draw, we re-calculate each δ_{jc} for available titles and re-run the simulation described by Equation 4 to obtain the hypothetical appeals. Thirdly, again for each draw, we re-calculate the consumer surplus under status quo, under the two scenarios, and their respective percentage changes with respect to the status quo. Finally, we calculate the standard deviations of the welfare measures.

5.2.1 EU-wide lifting of geo-blocking restrictions

We simulate the effect on consumer surplus that evolves when all titles available in any EU member state in the data, are now available in all member

states covered by the data. Results are displayed as blue bars in Figure 6 and Figure 7, and in columns EUFT, Δ EUFT and Δ EUFT4 of Table 6. We find that consumers in all covered EU member states would benefit from lifting geo-blocking for Netflix national catalogues in terms of quality. When taking the mean over each country’s consumer surplus change over all 4 periods, we find that the countries benefiting the most from lifting geo-blocking restrictions are the Czech Republic, Austria, and Poland, yet still very moderately with increases in consumer surplus of 0.69%, 0.69%, and 0.33%, respectively. The selection of countries comes as a surprise, given that in the last period in our data national Netflix catalogues in the Czech Republic and Poland are among the largest in our sample. When, instead of looking at the average of changes over the four periods, we only consider the change of consumer surplus in the last period, i.e. the second half of 2019 (column Δ EUFT4), we find that the largest increases can be found for Ireland, Austria, and Belgium (see Figure 7).

The population- weighted average over the four periods amounts to 0.13%, while the population-weighted average for the fourth period amounts to only 0.07%. Hence, the lower bound for an EU-wide increase in consumer surplus following a lift of geo-blocking restrictions among the covered member states is statistically significant but very low.

5.2.2 World-wide lifting of geo-blocking restrictions

In a further exercise, we simulate the effect on consumer surplus that arises when all titles available in any country in our dataset, are now available in all other countries as well. Results are shown as brownish bars in Figure 6 and Figure 7, and in columns WWFT, Δ WWFT, and Δ WWFT4 of Table 6. The effect of a world-wide lifting of geo-blocking restrictions is larger than the effect of EU-wide lifting of geo-blocking in Netflix for each individual country. This indicates that although we find the largest catalogues to be in the EU, there is still a number of high-quality titles that would not be available in the first scenario. Surprisingly, now Poland shows the largest gain in consumer surplus (1.26%), followed by the Czech Republic and Austria (1.14% and 0.89%). If we again restrict our analysis to the fourth period, once more Belgium, Austria, and Ireland show the largest gains in consumer surplus, with increases of 0.52%, 0.50%, and 0.43%, respectively. The average, weighted by population over all countries in the sample, amounts to 0.21%. If we only look at the EU countries,

this population-weighted average amounts to 0.31%. For the fourth period, in which catalogues are all larger than in the first period, the population-weighted average amounts to only 0.05% when we weigh all countries in the sample and to 0.08% if we only consider the EU countries in the sample.

6 Conclusion

Using a novel dataset comprised of Netflix streaming patterns and detailed catalogue information, we estimate demand on title-level and find that within a given genre the correlation of preferences for titles is high, suggesting that adding more titles will cannibalize shares of incumbent titles. We find that lifting geo-blocking restrictions will increase consumer surplus in two distinct scenarios. Simulating a scenario of free access to all titles available in any of the covered EU countries by all subscribers residing in those countries, suggests a moderate increase in consumer surplus of 0.13%. As would be expected because of different catalogue compositions, a world-wide frictionless access results in a higher increase in consumer surplus per capita (0.21%) than the lifting of geo-blocking restrictions within the EU only.

These findings are based on the set of titles that has been available between January 2018 and December 2019. There are indications why our results may either under- or overestimate the change in consumer surplus. On the one hand, they may underestimate the change in consumer surplus because we could only run simulations for titles that are available in at least two countries. Most of the local films are however only available in the production country's catalogue, we can therefore not evaluate how the export of e.g. Polish or Czech films would impact the welfare in other countries which have a large migrant population of the production country. On the other hand, our results may overestimate the change in consumer surplus because some of the films and TV shows really are tailored to a local taste and may not appeal to audiences in culturally more distant market, e.g. a German film may work better for an Austrian or Swiss audience than for an Italian audience, while by construction a non-available film from Germany is treated exactly like a non-available film produced in the US.

There are two more trends that may have an impact on SVoD-related consumer surplus in the future. Firstly, the potential impact of a geo-blocking

restriction may change as the share of in-house productions increases. Given that the titles branded as Netflix Originals usually show a wider availability across countries, a geo-blocking restriction targets non-original content more intensively than it targets original content. Secondly, internationally operating online retailers have enabled consumers to buy DVDs of productions from other countries that were not locally distributed. A potential phase out of DVDs or other physical film storage media would take away this choice from consumers and leave them worse off if there are no legal VoD options to watch the desired titles.

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A Figures and Tables

Figure 1: Watched titles as Percentage of full catalogues - TV Shows

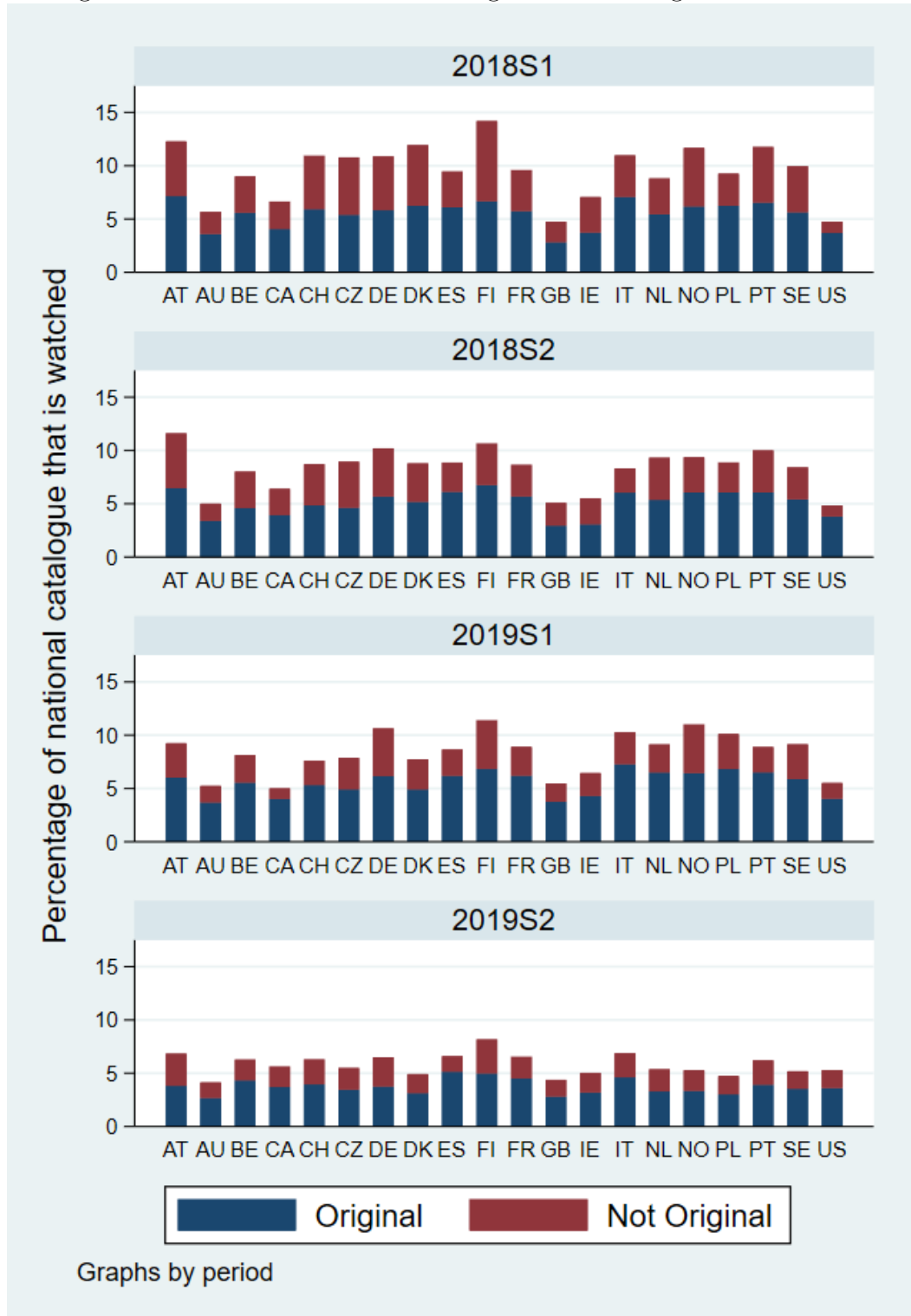


Figure 2: Watched titles as Percentage of full catalogues - Films

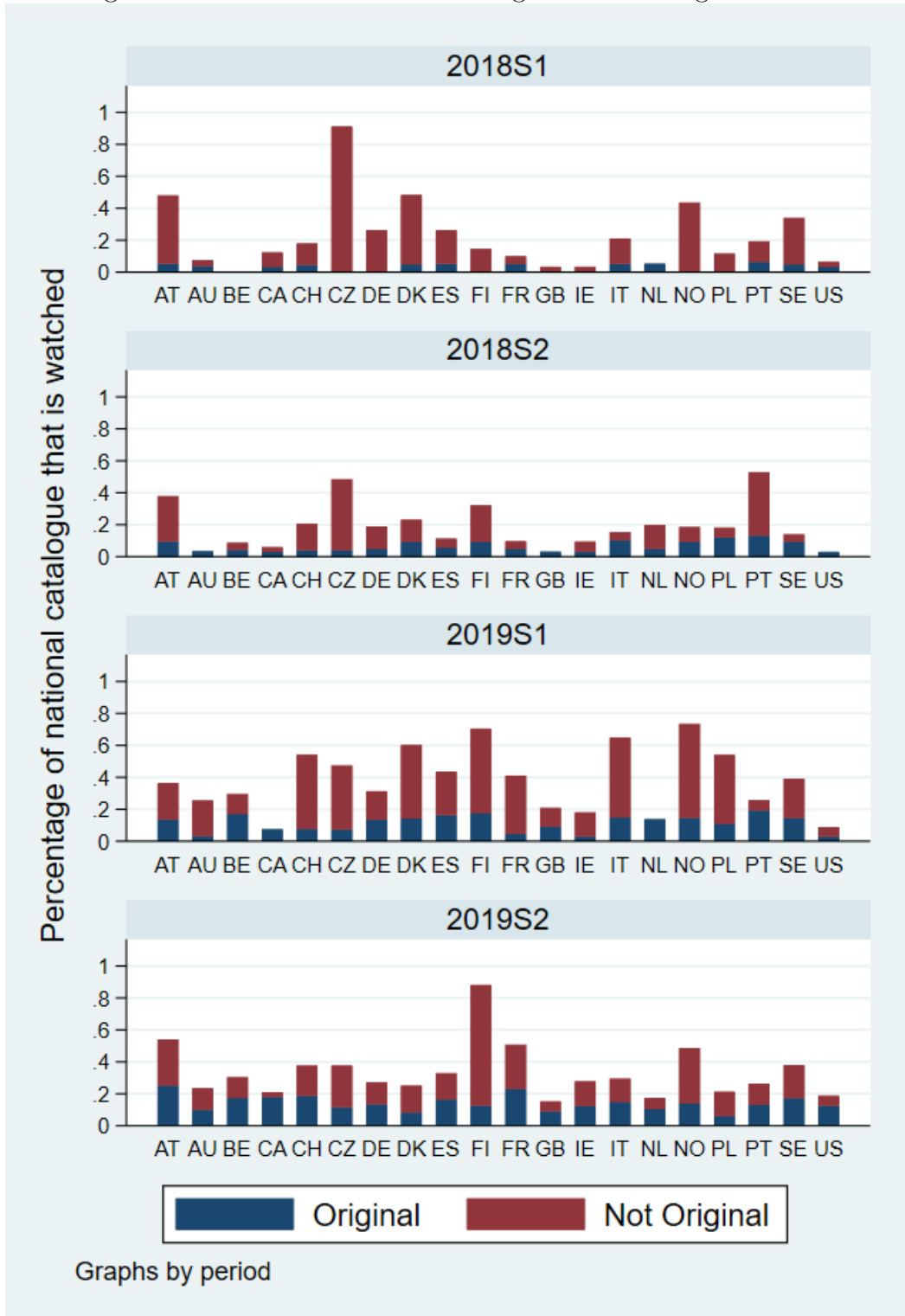


Figure 3: Overlap of catalogues - TV Shows

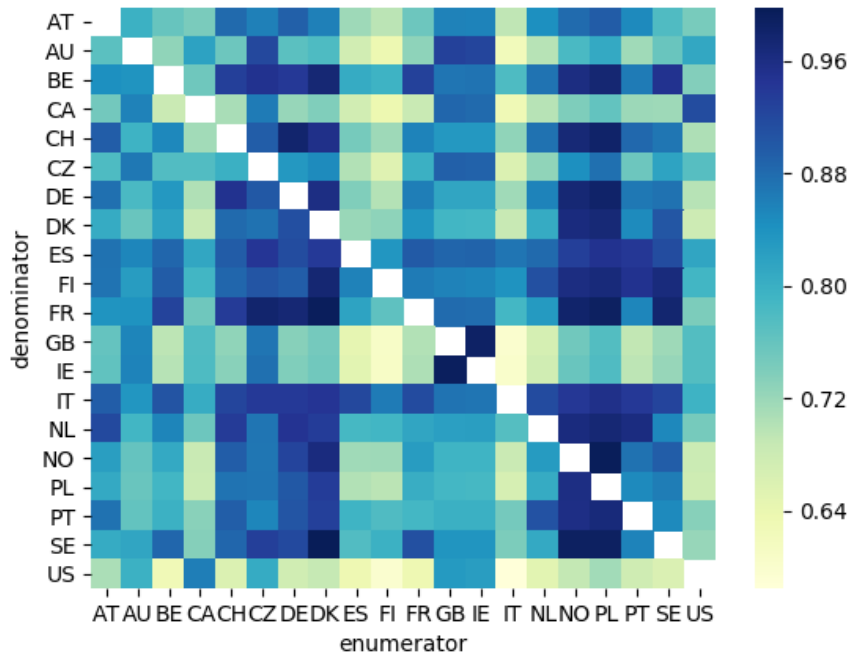


Figure 4: Overlap of catalogues - Films

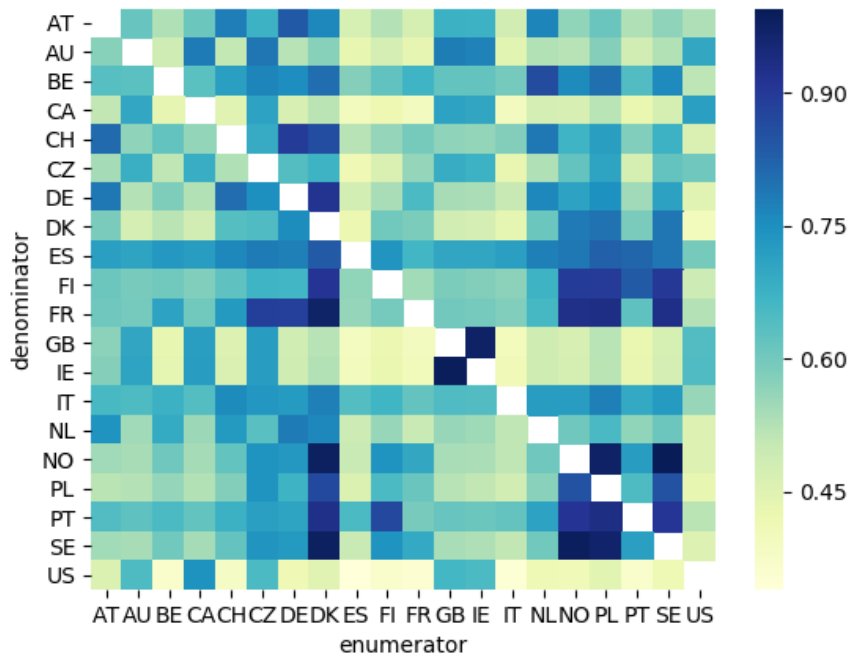


Figure 5: Comparison of title appeal, Germany vs. Spain

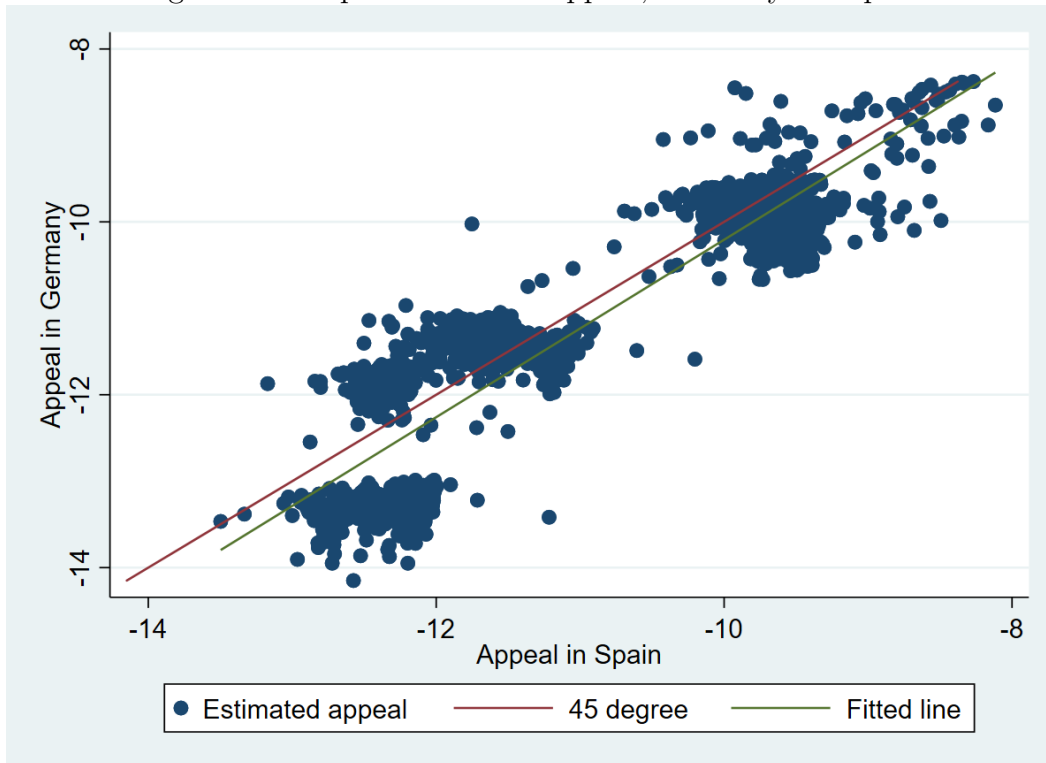


Figure 6: Counterfactuals - Change in Consumer Surplus

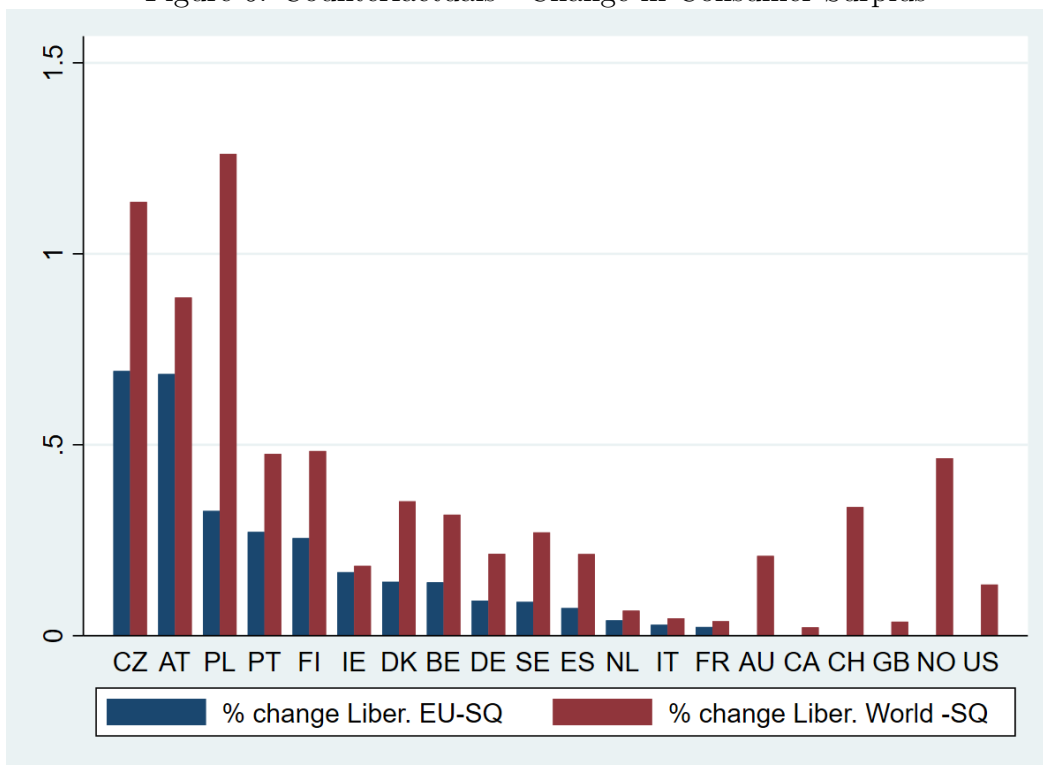


Figure 7: Counterfactuals - Change in Consumer Surplus 2019S2

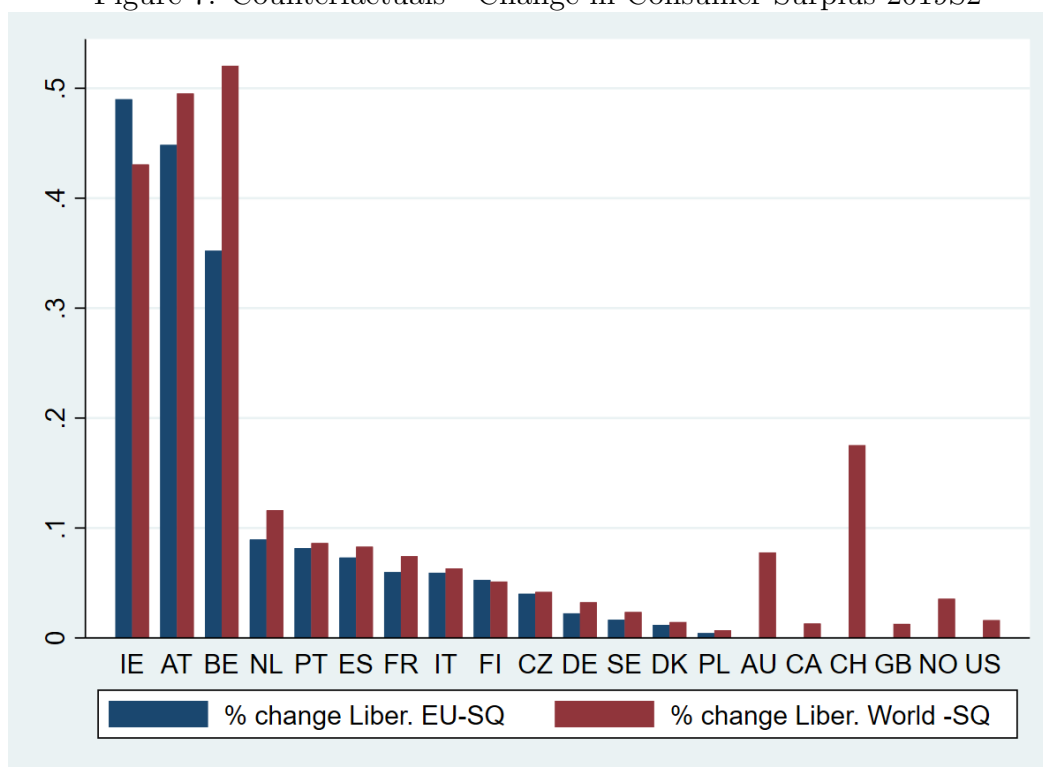


Table 1: Descriptive statistics, pooled data

Variable	Obs	Mean	Std. Dev.	Min	Max
Award wins	274,215	5.732	14.785	1	253
Award nominations	274,215	10.969	26.711	1	382
Number of IMDb votes	274,215	59,993	151,483	5	2,187,880
Average rating	274,215	6.464	1.193	1.3	9.5
Age of title	274,215	8.869	8.958	1	100
Film	274,215	0.723	0.447	0	1
Domestic	274,215	0.052	0.221	0	1
Main prod. country is EU MS	274,215	0.120	0.325	0	1
Main prod. country is US	274,215	0.481	0.500	0	1
Main prod. country and market is EU MS	274,215	0.085	0.279	0	1
Main prod. country and market is US	274,215	0.027	0.162	0	1

Table 2: Content type by period in Netflix national catalogues

mkt	Film				TV show			
	2018S1	2018S2	2019S1	2019S2	2018S1	2018S2	2019S1	2019S2
AT	1,875	2,112	2,201	2,775	643	758	865	1,257
AU	2,683	2,933	3,139	2,975	916	1,058	1,220	1,304
BE	2,182	2,303	2,369	2,305	733	873	1,007	1,131
CA	3,236	3,369	4,011	3,328	934	1,046	1,316	1,245
CH	2,235	2,420	2,588	2,658	759	929	1,090	1,239
CZ	2,085	2,474	2,741	3,453	816	972	1,119	1,384
DE	1,906	2,111	2,238	2,954	653	774	893	1,278
DK	2,071	2,162	2,823	3,585	578	694	957	1,342
ES	1,909	1,774	1,838	1,826	655	767	855	1,031
FI	2,066	2,181	2,270	2,383	599	695	746	1,003
FR	2,016	2,075	2,194	2,170	730	879	999	1,132
GB	3,034	3,192	3,369	3,295	990	1,119	1,279	1,417
IE	3,041	3,186	3,330	3,237	991	1,108	1,256	1,408
IT	1,901	1,945	2,006	2,037	565	662	769	974
NL	1,885	2,012	2,180	2,874	624	708	799	1,155
NO	2,070	2,162	2,045	2,874	582	693	791	1,343
PL	1,721	1,649	1,850	3,286	594	676	791	1,393
PT	1,555	1,512	1,558	2,285	595	709	798	1,224
SE	2,069	2,151	2,043	2,897	603	701	798	1,215
US	3,135	3,317	3,436	3,205	1,031	1,077	1,232	1,325

Note: Final Dataset, only titles for which both imdbid and production country could be identified. Only includes scripted content.

Table 3: Catalogue composition: Main production country of TV shows in national catalogues

Origin	Destination																			
	AT	AU	BE	CA	CH	CZ	DE	DK	ES	FI	FR	GB	IE	IT	NL	NO	PL	PT	SE	US
AT	6	1	1	5	6	2	6	2	25	27	28	41	1	24	2	1	1	1	1	1
AU	28	55	27	42	24	31	26	31	25	27	28	41	41	41	26	31	35	28	30	40
BE	8	7	13	7	9	10	10	10	8	9	8	5	5	8	14	10	10	10	10	7
CA	57	69	54	83	51	66	58	62	54	53	59	71	69	55	51	60	64	55	59	72
CH	1	1	2	1	2	2	2	2	1	1	2	1	1	1	1	2	2	2	2	1
CZ						1														
DE	66	15	17	14	65	10	66	47	10	12	11	17	17	10	55	54	56	53	15	16
DK	5	4	5	7	6	4	6	9	3	9	4	4	4	3	6	9	6	6	10	7
ES	27	28	25	37	25	31	25	28	36	27	24	30	30	26	28	28	30	33	28	39
FI	4	4	4	4	4	3	4	6	2	14	1	5	5	3	4	5	3	3	5	4
FR	46	40	55	41	55	46	52	52	35	36	61	44	43	34	46	52	53	45	47	44
GB	138	163	118	156	117	121	112	121	98	108	108	212	203	91	116	120	126	115	117	150
IE	3	6	2	6	2	5	2	3	3	3	2	6	6	3	2	3	5	3	3	5
IN	21	49	16	48	18	48	14	13	11	10	17	49	49	11	11	13	18	11	13	48
IT	12	14	14	14	13	12	13	12	12	10	12	13	13	24	14	11	12	12	12	11
JP	175	113	156	141	196	157	198	182	145	109	171	138	137	162	174	190	197	181	155	141
KR	135	219	179	118	182	210	185	193	137	94	192	211	212	96	105	190	202	107	187	117
NL	4	4	7	4	4	4	4	4	4	3	4	5	5	4	15	4	3	3	4	4
NO	4	5	11	6	5	7	6	12	4	11	6	6	7	5	12	12	12	9	12	6
PL	3	3	3	3	3	3	3	4	3	4	3	4	3	3	3	4	8	4	4	3
SE	9	4	13	5	9	3	9	18	4	16	3	4	4	3	15	16	11	10	16	4
US	434	441	436	550	442	459	439	467	426	420	433	457	456	406	430	459	463	456	449	530
ROW	201	281	117	299	155	274	154	137	126	93	116	288	284	102	141	144	161	167	116	309

Table 4: Catalogue composition: Main production country of films in national catalogues

Origin	Destination																US				
	AT	AU	BE	CA	CH	CZ	DE	DK	ES	FI	FR	GB	IE	IT	NL	NO		PL	PT	SE	
AT	13	4	5	6	15	4	18	17	3	3	3	4	4	4	19	3	3	3	3	3	6
AU	20	41	21	57	19	28	20	24	17	19	23	53	53	22	23	23	26	18	23	23	57
BE	5	7	19	12	7	13	11	14	3	8	14	9	9	13	16	15	12	7	14	14	18
CA	82	101	77	144	78	65	89	105	60	73	68	121	121	69	95	84	82	65	85	85	161
CH	3	2	2	4		2	2	3	2	2	2	4	4	2	3	2	2	2	2	2	2
CZ	3	2	4	3	3	48	3	4	3	3	2	3	3	3	4	3	5	4	3	3	4
DE	202	56	58	64	181	47	209	174	39	51	46	58	57	47	165	58	66	48	57	57	67
DK	9	7	4	18	7	9	11	108	3	88	10	11	11	5	8	85	50	47	91	91	19
ES	84	90	79	98	80	85	85	89	149	86	72	97	97	87	87	86	91	86	86	86	100
FI	2	1	4	1	1	2	2	4	2	5	1	2	2	1	6	3	3	3	3	3	1
FR	84	71	153	139	101	242	263	301	77	85	369	91	90	84	107	270	275	73	271	271	129
GB	174	190	176	298	151	150	177	224	125	174	149	335	332	145	198	201	194	160	199	199	267
IE	8	9	7	19	7	8	8	10	6	8	10	26	25	5	9	10	9	8	10	10	17
IN	367	816	207	821	208	812	190	184	138	122	187	812	798	167	183	170	272	122	170	170	818
IT	27	18	18	29	37	18	26	34	17	21	11	23	23	177	32	20	19	21	20	20	28
JP	71	31	46	64	76	47	75	70	51	32	53	44	44	53	69	52	54	53	52	52	58
KR	28	75	49	69	52	58	33	37	34	26	51	57	59	28	27	36	36	27	36	36	69
NL	12	16	128	17	12	10	12	13	9	11	13	14	14	9	156	13	12	9	13	13	17
NO	4	6	7	13	4	4	4	28	3	28	7	6	6	4	10	38	21	17	27	27	14
PL	12	12	12	13	11	12	12	11	12	12	10	12	12	12	12	11	81	11	11	11	12
PT			1	1								1	1		1						4
SE	4	6	6	11	4	5	4	80	4	75	6	8	8	4	7	77	47	45	84	84	8
US	2004	2250	2091	2919	2221	1942	2115	2543	1735	2082	1764	2478	2461	1808	2150	2246	2220	1831	2244	2244	2450
ROW	496	620	354	690	427	599	435	453	394	327	354	660	635	337	440	369	401	361	378	378	728

Table 5: Demand of Netflix users: Films and TV shows

VARIABLES	OLS (1)	2SLS (2)	2SLS (3)	2SLS (4)
Quality of title (α)	0.010*** (0.002)	0.104*** (0.008)	0.061*** (0.006)	0.060*** (0.006)
Within-nest share (σ)	0.763*** (0.001)	0.859*** (0.005)	0.858*** (0.005)	0.857*** (0.006)
Netflix Original	0.087*** (0.004)	0.032*** (0.005)	0.035*** (0.005)	0.036*** (0.005)
Domestic	0.031*** (0.010)	0.046*** (0.009)	0.029*** (0.009)	0.047*** (0.010)
Main prod. country is EU MS	0.023*** (0.008)		0.030*** (0.005)	0.044*** (0.009)
Main prod. country is US	0.062*** (0.003)		0.048*** (0.004)	0.050*** (0.004)
Main prod. country and market is EU MS	0.018* (0.009)			-0.023** (0.010)
Main prod. country and market is US	-0.128*** (0.014)			-0.033* (0.020)
Log(GDP)	9.328*** (0.089)	8.830*** (0.128)	8.836*** (0.128)	8.839*** (0.128)
Log(Award wins)	0.001 (0.002)	-0.028*** (0.003)	-0.012*** (0.003)	-0.012*** (0.003)
Log(Award nominations)	0.015*** (0.002)	-0.006*** (0.002)	-0.004* (0.002)	-0.004* (0.002)
Constant	-59.597*** (0.447)	-57.424*** (0.637)	-57.169*** (0.632)	-57.171*** (0.633)
Observations	274,215	274,215	274,215	274,215
Adjusted R-squared	0.841	0.831	0.833	0.833
Genre-Fixed effects	YES	YES	YES	YES
Country-time-Fixed Effects	YES	YES	YES	YES

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Dependent variable in all specifications is $\log(\frac{s_i}{s_0})$

Instruments are the number of titles, the number of Netflix original titles, and the number of IMDb votes within (i) the same national Netflix catalogue, and (ii) within the same genre in the national catalogue.

Table 6: Changes in consumer surplus per capita with simulated appeals

	SQ	EUFT	WWFT	Δ EUFT	Δ EUFT4	Δ WWFT	Δ WWFT4
AT	0.556	0.560	0.561	0.685	0.448	0.886	0.495
	0.074	0.075	0.075	0.028	0.017	0.038	0.018
AU	2.427		2.431			0.209	0.078
	0.331		0.331			0.018	0.011
BE	0.770	0.771	0.772	0.140	0.352	0.317	0.520
	0.104	0.104	0.104	0.009	0.021	0.017	0.023
CA	1.813		1.814			0.022	0.013
	0.246		0.246			0.001	0.002
CH	0.526		0.528			0.337	0.175
	0.070		0.070			0.022	0.016
CZ	0.151	0.151	0.152	0.693	0.040	1.136	0.042
	0.020	0.020	0.020	0.046	0.007	0.071	0.008
DE	0.492	0.493	0.493	0.092	0.022	0.215	0.032
	0.066	0.066	0.066	0.003	0.001	0.007	0.002
DK	1.999	2.001	2.003	0.141	0.012	0.352	0.014
	0.269	0.269	0.269	0.009	0.002	0.014	0.002
ES	0.491	0.491	0.492	0.072	0.073	0.214	0.083
	0.066	0.066	0.066	0.006	0.006	0.009	0.006
FI	0.846	0.848	0.850	0.256	0.053	0.484	0.051
	0.113	0.113	0.113	0.016	0.007	0.020	0.007
FR	0.692	0.693	0.693	0.023	0.060	0.038	0.074
	0.093	0.093	0.093	0.001	0.003	0.002	0.003
GB	1.417		1.417			0.037	0.013
	0.195		0.195			0.001	0.001
IE	1.604	1.606	1.607	0.167	0.490	0.183	0.431
	0.218	0.218	0.218	0.011	0.026	0.013	0.023
IT	0.355	0.355	0.355	0.029	0.059	0.046	0.063
	0.048	0.048	0.048	0.003	0.005	0.004	0.005
NL	1.158	1.158	1.158	0.040	0.090	0.066	0.116
	0.158	0.158	0.158	0.003	0.006	0.005	0.007
NO	1.868		1.874			0.465	0.036
	0.249		0.249			0.018	0.004
PL	0.500	0.501	0.503	0.327	0.004	1.262	0.007
	0.067	0.068	0.068	0.027	0.001	0.087	0.001
PT	0.373	0.374	0.374	0.272	0.082	0.476	0.086
	0.051	0.051	0.051	0.016	0.010	0.022	0.011
SE	1.271	1.271	1.273	0.089	0.017	0.271	0.024
	0.169	0.169	0.170	0.006	0.002	0.011	0.003
US	1.477		1.479			0.134	0.016
	0.203		0.203			0.015	0.002

Note: SQ: Status Quo, EUFT: Lifting geo-blocking within EU, WWFT: Lifting geo-blocking worldwide (all in levels). Last four columns are percentage changes relative to SQ. Bootstrapped standard errors in parentheses.



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