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Abstract

Netflix, as a potential competitor to the cinema industry, was introduced in various European markets between 2012 and 2014. We use movie ticket sales from 2000 to 2016 for 19 European countries to estimate a causal effect of Netflix entering these markets. We find that Netflix has a positive effect on ticket sales. Thus, the Netflix experience can complement the cinema experience. However, preliminary descriptive statistics show, that this effect reverse starting 2016, when Netflix released more high quality and localized content. It is likely, that this development will continue to a trend, and movie tickets sales will decrease further.

Keywords: Movie industry, Netflix, VoD

JEL-Classification: L82

1. Introduction

The entering of Netflix in video markets has been seen for many in the popular press as a direct threat to the established TV landscape but also for some (e.g. Bloomberg, CNBC) as a threat for (mainstream) cinema. While Netflix and similar Video on Demand (VOD) - services positioned themselves initially as a direct competitor to TV, e.g. in using the televisions at home, not having interruptions by commercials while watching the content and a non-linear viewing experience, a change in market strategy has occurred in the last two years. Netflix has started to Hollywood-like blockbuster additionally to relative high quality TV shows. However, the effect on the movie theater industry is not clear cut from a consumer demand theory point of view, and thus, needs to be tested empirically. Theoretically, Netflix and the cinema experience could be substitutes, complements or less likely not related at all.

This short paper is the first to assess the impact of Netflix on the demand of movie theater tickets and its purpose is to stimulate a discussion for further research. It is based on a longer working paper written in German by (Wagner and Parlow 2018) and extends their data set because more annual country data are available now.

Its main finding is that for the European countries where Netflix was introduced, Netflix has a positive effect on cinema demand, e.g. is a complement to the movie theater experience. We find that the introduction of Netflix in 2012, 2013, and 2014 in ten European countries increases annual per capita cinema visits by up to 14 percent. Yet, this trend should reverse in the years following 2016, e.g. because more premium content is available at Netflix (and similar VoD-services), increased TV sizes and also increased movie ticket prices reducing the demand for cinema tickets. Thus, preliminary descriptive statistics show that the ticket sales plumb by eight to ten percent from 2016 to 2017.

This paper is organized as follows. In section 2 a short literature review follows. In section 3, we introduce to the data and in section 4 we present our empirical results. A conclusion follows in section 5.

2. Related Literature

The literature on the effect of VoD-demand services on cinema demand is basically non-existing to our knowledge[1]

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[1]An exception is the purely descriptive paper written by Silver and McDonnell (2007). Though, their focus is on how IMAX can draw attention back to movie theaters, given that substitutes, like Pay TV with some VOD and DVD are available to consumers are available.

Yet, we draw from studies asking a similar question, e.g if possible substitutes (or complements) have an effect on cinema demand. Similar concerns were in the media when televisions sets became affordable and spread across households in the 1950s (Dewenter and Westermann 2005). This is the reason why a few authors attempt to estimate the impact of the introduction of televisions (TV) on cinema demand.

Blanco and Pino (1997) find that TV has a negative impact on cinema demand for Spain. In contrast, Macmillian and Smith (2001) find for the UK that TV has no significant impact on cinema demand. Finally, Dewenter and Westermann (2005) test the role of TV for the cinema demand in Germany. They find these two goods are substitutes. Additionally, they test how the availability of video recording services at home affects cinema demand and find no effect.

These few studies use different estimations techniques, like cointegration analysis, utilizing the time series nature of the data. This is appropriate for single country studies but less useful for a multi-country study like ours using a dummy variable for the introduction of Netflix. Yet, we draw from these papers using similar variables to explain cinema demand, and thus, these papers are a good starting point for the analysis following.

Nonetheless, Netflix (and other VOD services) uses the TVs at home for consuming the content. Yet, in contrast to the regular and linear TV experience, Netflix has some similarities to the experience in a movie theater. Consumers can choose what to watch and when, and do not need to follow strict time slots for their favorite content. With increasing TV sizes a cinema like experience can be replicated at home, but some advantages and disadvantages over the cinema experience exist.

Advantages over movie theaters are, that the streaming content can be paused any time and more content is available for a flat fee. However, the content was regarded as inferior, e.g. the focus is on TV shows and older movies in the beginning of the streaming service era. But, this has changed in the recent years. Netflix (and other services, like Amazon Prime) offer more popular movies within six months after they left the movie theaters[2]. Further, the quality of original content improved and many positive reviews draw attention to these services. It is not surprising, that subscriber rates grow in the two digits to 137 Million subscribers world wide in 2018 for Netflix alone (Statista 2018)[3]. It is very likely this growth will continue, especially for the entire VOD / streaming market, with more content providers, like Disney, entering the market next year. Finally,

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[2]Actually, most movies are available to rent online with the release of the film disk and become available soon after for streaming service subscribers.

[3]Amazon and other providers are more secretive over the subscriber numbers, or in the case of prime, how many actually used the VOD content.

Netflix has started to produce original movies as well to draw consumers away from movie theaters.

Even, if the cinema experience cannot be replicated completely at home, knowing that consumers go twice to three times a year to a movie theater (see Table 1), Netflix can be a credible competitor for the movie theater industry for the above mentioned reasons.

3. Data, descriptive statistics and empirical strategy

The primary source for cinema data is Media Salles, an Italian website financed by the European Union. Media Salles offers a database on movie ticket sales and ticket prices for almost all European countries. Additionally, standard economic variables like GDP and unemployment rates can also be found.

We focus on the 19 Western European countries available given that the cultural and economic backgrounds are similar. However, Media Salles also includes the same data for Eastern European countries but differences in the cinema demand, movie ticket prices and income makes comparisons to Western European countries less valid. It is possible to just focus in a separate set of estimations on these countries but another concern is, that Netflix was introduced in 2016 in these countries, leaving just one year of (preliminary) observations for Netflix in these markets[4].

In Figure 1 and Figure 2 we plot cinema visits per capita over the period 2000 to 2016 for our sample of countries. Figure 1 shows countries where Netflix was introduced between 2012 and 2014 while the remaining countries can be found in Figure 2.

[Figure 1 and Figure 2 about here.]

The overall trend for cinema demand is falling for almost all countries starting already in the year 2000. As expected a significant bump is observed for the 2008/2009 recession. Thus, a negative trend can be observed before Netflix entered the markets. During this time 3D movies became popular but also DVDs and then Blurays. The latter two could explain why the demand is falling. Yet, for some countries with the introduction of Netflix between 2012 and 2014 the demand for cinema ticket rises, reversing the falling trend, at least until 2015 / 2016.

This purely descriptive effect needs to be tested empirically to exclude other possible explanations for this finding. We use our data to estimate an empirical model of the following form:

$$\text{Ticket Sales}_{it} = \alpha + \beta_1 \text{Netflix}_{it} + \beta_2 \text{Income}_{it} + \beta_3 \text{Cinemas}_{it} \tag{1}$$

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[4]Media Salles only has preliminary data for 2017 available during Summer 2018.

$$+\beta_4 \text{Ticket Price}_{it} + \beta_5 \text{Unemployment}_{it} + \text{Country}_i + \text{Year}_t + \epsilon_{it}$$

The dependent variable is ticket sales and is measured as annual per capita sales in a given market i. Western European movie goers visit a cinema 2.21 to 2.24 times a year (see Table 1) with above average exceptions in Island and Ireland, with five and four visits per capita respectively.

The variable Netflix is the main variable of interest, indicating if Netflix is available in a country or not. Because some countries have Netflix at the same time, and other countries do not have Netflix, the effect on ticket sales can be interpreted as a causal effect of the introduction of Netflix in these markets. A necessary assumption is that the countries follow (or would have followed) a similar trend in ticket sales. This can be already seen in Figure 1 and Figure 2.

Other control variables include the unemployment rate, the per capita income, the number of cinemas in a country and average movie ticket prices. The price variable is potentially endogenous with ticket sales which could influence the results. However, there is no reason to assume this affects the estimation of the Netflix variable. Yet, later we remedy this potential issue with using last year ticket prices as an instrument in the estimation[5].

Macroeconomic effects common to all countries in a given year are captured with the variable year, a time fixed effect. Fixed effects common to a country are controlled for as well, this could be actually the taste for movies, which are relatively persistent over time (Ferri 2013, Axarlian 2018) and cannot be controlled for directly. Finally, a robust standard error is captured by the variable ϵ.

[Table 1 about here]

4. Empirical Results

Our main results can be found in Table 2. Given that all continues variables are transformed into logarithmic variables, the coefficients can be interpreted as an elasticity, and in the case of the binary Netflix variable as an effect in percent. We present results for a baseline model without Netflix, and add Netflix as an variable as well as fixed effects in the columns following.

Before turning to the Netflix variable, a few words on the dependent variables used in the literature. In all models we find that the number of cinemas increases ticket sales while higher

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[5]Another idea, and less rough (e.g. lame) instrument, could be the cost of production of a movie. More expensive movies are typically more expensive to rent for cinemas. In the working paper we used the production costs of the top 20 movies in a given country but the instrument was rather weak.

ticket prices decrease ticket sales. This expected from standard consumer demand theory and found in the literature quoted above. Similarly, someone would expect that with higher unemployment households shift their household income to goods more important for the daily livelihood. However, the effect of income various according to the fixed effects included. Cinema demand can be a normal good, (e.g. increases with more income), an inferior good (e.g. decreases with more income) or independent of income. All this could explained but our focus is on Netflix and we skip a more detailed discussion to conserve space. The interested reader may be referred to Dewenter and Westermann (2005) for a discussion[6].

The result for Netflix is more robust, as compared to the income variable above. The introduction of Netflix in various European markets between 2012 and 2014 has a positive effect on movie ticket sales, and thus, oppose the overall negative trend for cinema demand in most European countries. Because of Netflix ticket sales per capita increase by up to 14,7% or on the average from 2.24 to visits per year to 2.5 visits a year. This effect is unexpected given that Netflix does not market (at least initially) their streaming service as a competitor to movie theaters, but it can be explained by demand theory. Netflix actually complements the cinema experience. First, consumers can choose what to watch when, which is similar to choosing a movie at the theater. Second, Netflix offered in the beginning relatively old movies, e.g. the predecessors to movies played in the movie theater. Given that Netflix typically has a younger audience who may have watched an old Star Wars (or X-Men and such on) movie on Netflix, the younger audience could have got "hooked" and want to watch the latest Star Wars (or X-Men) currently played at the theaters. This finding is robust across all our specifications, and a bit weaker for the model with a common trend variable instead of year fixed effects. This could be, because the trend variable captures the overall development in the movie industry, instead of particular shocks common to all countries in a given year. We still find a similar effect once we control for endogeneity (e.g. caused by simultaneity) between ticket sales and ticket prices in the instrumental variable regression (column 6). The instrument used for prices were last year ticket prices, and as expected above, does not influence the result for our Netflix variable.

[Table 2 about here]

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[6]For instance if income increases consumers could shift to more costly alternatives, like monthly Cable TV or VOD subscriptions, more frequent Bluray purchases or other pricier leisure options. Remember, on the average consumers just twice a year to the movies.

In Table 3 we focus on countries were Netflix was introduced in 2012. We are interested to know how the longer presence of Netflix in these particular markets affects movie ticket sales. The effect is weaker with roughly 10% increased ticket sales and could point to a pure introduction effect of Netflix itself. Thus, we use lags and leads in Table 4 to explore this premise further, and do find a pure introduction effect. This could point towards a development that ticket sales increase because of the introduction of Netflix but this effect weakens over time. Therefore, it is likely that the negative trend in ticket sales will return, and even more likely increase because of the widespread availability of video streaming services.

[Table 3 and Table 4 about here]

Media Salles offers preliminary (but not final) movie ticket sales statistics for 2017 on their website (reproduced in Table 5) and these numbers show that within a short period of time, e.g. from 2015 to 2017 movie ticket sales decrease at two digit rate for some markets, especially since 2016. During this time frame, Netflix and other service started to invest billions into original and localised content, and not just to produce TV shows but also original movies, like Bright (with Will Smith) for 90,000,000 Million USD a budget, for a smaller Blockbuster movie at the theaters, becoming a potential competitor for the movie theater industry.

5. Conclusion

In this paper we estimate the impact of a popular video streaming service on movie ticket sales in European markets. We choose Netflix, because Netflix started early in many countries, has the biggest market shares, and the most original content from its competitors during our sample period 2000 to 2016. This may change with new providers entering the market.

We argue that Netflix offers a similar experience as movie theaters, and is therefore not just a competitor to classic TV. Yet, given that Netflix offered in the beginning only older movies, we find that Netflix is complement to the movie theater experience. Ticket sales increase initially by up to 14%, a trend which starts to reverse late in 2015 and especially more visible from 2016 to 2017. Starting in 2016 Netflix released its first originally produced movies and offered more critically acclaimed TV shows.

With a market growing this fast, and attracting new streaming providers producing their own content, the movie theater industry faces direct competition through these services and will see decreasing sales, a trend which Netflix could just reverse for a few years. A few years back new

technologies like 3D were a big hope which could attract consumers, but in the next years, the movie theater industry should or could offer a similar experience as Netflix (and others), e.g. movie flatrates (as in the US), or even partnerships with VOD services showing high quality TV shows on the big screens.

References

[1] Axarlian, Gabriel Pablo (2018) "The introduction of infinite durability to an information good and the decision to buy or rent: evidence from the film industry", Journal of Media Economics, Vol.30 No.3, pp.121-142

[2] Blanco, Fernandez Victor and Pino, Banos Jose (1997) "Cinema Demand in Spain: A Cointegration Analysis", Journal of Cultural Economics", Vol.21, pp.57-75

[3] Cameron, Samuel (1986) "The Supply and Demand for Cinema Tickets: Some U.K. Evidence", Journal of Cultural Economics, Vol. 10 No.1, pp.38-62

[4] Dewenter, Ralf and Westermann, Michael (2005) "Cinema Demand in Germany", Journal of Cultural Economics, Vol. 29, p.213-231

[5] Ferri, Mickey (2013) "Rent, Buy, or Pirate: Consumer Preferences in the Movie Industry", Dissertation, The University of Chicago, UMI Number: 3568535

[6] Macmillan, Peter and Smith, Ian (2001) "Explaining Post-War Cinema Attendance in Great Britain", Journal of Cultural Economics, Vol. 25, pp.91-108

[7] Media Salles (2018) "European Cinema Yearbook 2017", `http://www.mediasalles.it/ybk2018/index.html`, last accessed 06/26/2018

[8] Silver, Jon and McDonnell John (2007) "Are movie theaters doomed? Do exhibitors see the big picture as theaters lose their competitive edge?", Business Horizons, Vol. 50, pp.491-501

[9] Statista (2018) "Number of Netflix streaming subscribers worldwide from 3rd quarter 2011 to 3rd quarter 2018 (in millions)", `https://www.statista.com/statistics/250934/quarterly-number-of-netflix-streaming-subscribers-worldwide/`, last accessed 10/25/2018

[10] Wagner, Sabrina and Parlow, Anton (2018) "Eine Analyse des Einflusses von Netflix und Filesharing auf die Kinoindustrie", Thünen-Series of Applied Economic Theory 154, University of Rostock Working Paper

Figures and Tables

Figure 1: Cinema visits per capita - 2000 to 2016
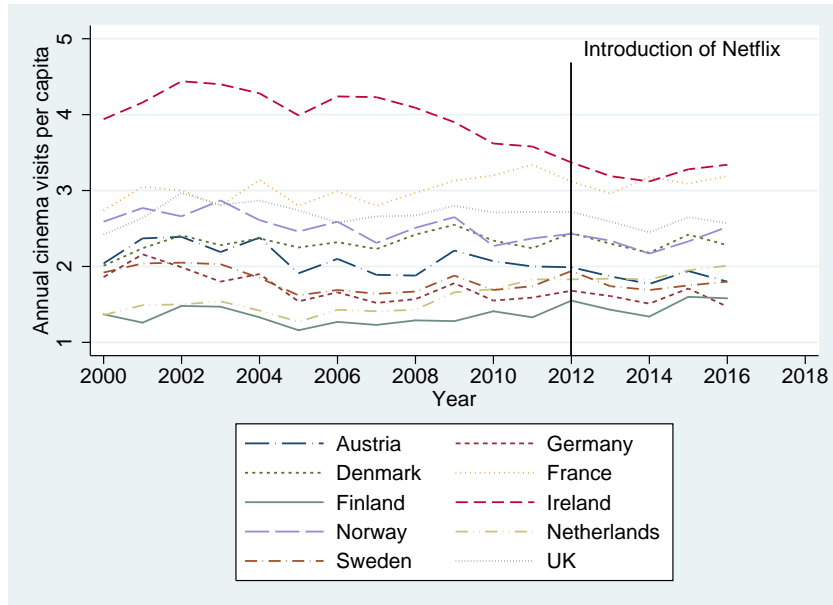
The above numbers include the countries where Netflix was introduced in 2012, 2013, and 2014. Netflix was introduced in the Netherlands in 2013, and in 2014 in Austria, Germany, and France.
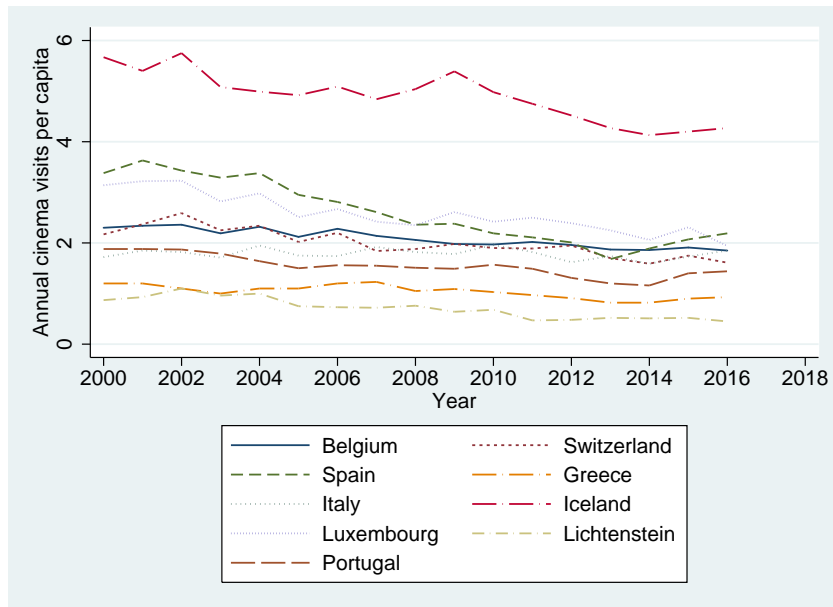
Figure 2: Cinema visits per capita - 2000 to 2016

The above numbers include the countries where Netflix was introduced in 2016, the last year fully available for this data set

Table 1: Descriptive Statistics - Averages for Netflix vs. Non-Netflix countries - 2000 to 2016

	Netflix	Non-Netflix
Admissions	56024.19	48145.13
Cinemas	496.95	526.34
Gross Box Office	427693.5	283878.6
Screens	1590.27	1428.86
Ticket price	9.22	7.16
Unemployment rate	6.99	7.58
Per capita:		
Admissions	2.24	2.21
GDP (USD)	54205.02	47965.84

These include the countries having Netflix since 2012, 2013, and 2014.

Table 2: Visits per capita - Demand regressions - 2000 to 2016 - Western Europe

	Baseline		F.E.	F.E. + Trend	IV
Netflix	-	.140***	.147***	.069***	.146***
		(.049)	(.025)	(.023)	(.024)
Income	.299***	.300***	-.191**	-.046	-.112
	(.078)	(.078)	(.086)	(.037)	(.118)
Unemployment	-.211***	-.235***	-.144***	-.095***	-.143***
	(.052)	(.054)	(.027)	(.026)	(.026)
Cinemas	-.027	-.027	.192***	.169***	.187***
	(.018)	(.018)	(.051)	(.054)	(.046)
Ticket price	-.635***	-.736***	-.151**	-.082	-.251**
	(.103)	(.111)	(.070)	(.060)	(.125)
n	298	298	298	298	298
R^2	0.31	0.27	0.95	0.94	0.95

Notes: Robust standard errors are in parentheses. Level of significance is *** 1 Percent, ** 5 Percent, * 10 Percent. Fixed effects include country and year fixed effects. In the second fixed effect specification only country fixed effects and a common trend variable are used. The instrument for ticket price in the IV regression is last year's ticket price. All variables but Netflix are in log form. Netflix is a variable indicating if Netflix is present in the country or not.

Table 3: Visits per capita - Demand regressions - 2000 to 2016 - Western Europe - only 2012 countries

	Baseline		F.E.	F.E. + Trend	IV
Netflix 2012	-	.214***	.098***	.060**	.099***
		(.048)	(.024)	(.023)	(.024)
Income	.299***	.300***	-.210**	-.081**	-.121
	(.078)	(.078)	(.085)	(.035)	(.125)
Unemployment	-.211***	-.238***	-.150***	-.107***	-.149***
	(.052)	(.053)	(.027)	(.025)	(.027)
Cinemas	-.027	-.025	.214***	.187***	.209***
	(.018)	(.018)	(.056)	(.058)	(.052)
Ticket price	-.635***	-.763***	-.125*	-.077	-.240*
	(.103)	(.111)	(.073)	(.061)	(.138)
n	298	298	298	298	280
R^2	0.31	0.28	0.95	0.93	0.95

Notes: Robust standard errors are in parentheses. Level of significance is *** 1 Percent, ** 5 Percent, * 10 Percent. Fixed effects include country and year fixed effects. In the second fixed effect specification only country fixed effects and a common trend variable are used. The instrument for ticket price in the IV regression is last year's ticket price. All variables but Netflix are in log form. Netflix is a variable indicating if Netflix is present in the country or not.

Table 4: Visits per capita - Demand regressions - 2000 to 2016 - Western Europe

Period	Lags	Period	Leads
t	.113***	t	.127**
t-1	.024	t+1	.024
t-2	-.001	t+2	.053
t-3	.038	t+3	.031
t-4	.047	t+4	.053
n	233	n	298
R^2	0.96	R^2	0.96

Notes: Level of significance is *** 1 Percent, ** 5 Percent, * 10 Percent. Fixed effects include country and year fixed effects. Lags include the periods before the introduction of Netflix in a country, while leads include the periods following the introduction of Netflix in a country. The models include the same control variables as above.

Table 5: Ticket sales in Euro (x 1000) 2015 to 2017

Country	2015	2016	Change	2017	Change	Netflix since
Austria	127203	138179	8.6%	137700	-0.4%	2014
Belgium	164966	166861	1.1%	167840	0.5%	2016
Switzerland	206704	189682	-8.3%	174215	-8.2%	2016
Germany	1167137	1022965	-12.6%	1056053	3%	2014
Denmark	157452	150571	-4.4%	145162	-3.6%	2012
Spain	575242	602037	4.6%	598300	-0.6%	2016
France	1331651	1387678	4.2%	1365000	-1.7%	2014
Finland	89903	91100	1.3%	98300	7.0%	2012
Greece	63387	64400	1.5%	65000	0.9%	2016
Italy	632290	670893	6.1%	591000	-11.1%	2016
Ireland	104100	108933	4.6%	113700	4.3%	2012
Iceland	10995	14206	29.0%	13596	-4.3%	2016
Liechtenstein	250	218	-12.8%	161	-26.2%	2016
Norway	128233	151348	18%	128136	-15.4%	2012
Netherlands	275802	287715	4.3%	301763	4.8%	2013
Portugal	75013	77239	2.9%	81587	5.6%	2016
Sweden	197785	202281	2.2%	194900	-3.6%	2012
UK	1690012	1434278	15.2%	1440705	0.4%	2012

Ticket sales data are taken from Media Salles. The 2017 data are not final (November 2018). We used the ticket sales data to compute percentages changes.